HOPO
霍浦科技

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HOPO

Sophisticated feedback

Measure the future

HOPO
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Measure location solution providers

Magnetic & optical measurement solution service provider

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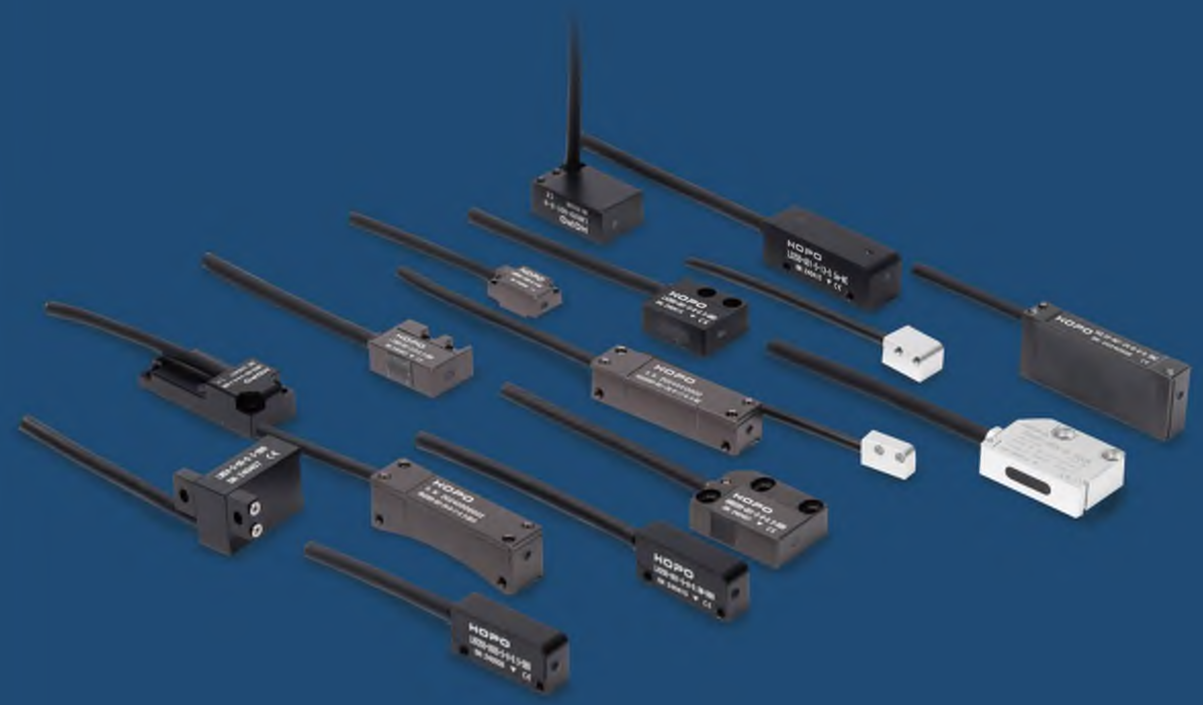

HOPO TECHNOLOGIES (NINGBO) CO.,LTD

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SPEED MEASUREMENT | ANGULAR SURVEYING | LOCATION POSITIONING

HOPO TECHNOLOGIES (NINGBO) CO.,LTD

Company profile

Deeply involved in the magnetic scale industry for 12 years

Pioneer and technology leader in the magnetic encoder industry

Innovation, disruption, and continuous value creation for customers

Hopo Technology is a high-tech enterprise integrating R&D, production, sales and service of magnetic & optical scales, instruments and controllers.

◆ The company focuses on the R&D and manufacturing of high-performance and high-reliability measurement, rotation and positioning intelligent sensors, combined with the market demand and feedback of customers in advanced manufacturing equipment, linear motors, semiconductors, lithium batteries, photovoltaics, industrial robots, medical and other professional fields, continuous innovation and accumulation, and has built a mature and diversified product line, including magnetic scale, magnetic reading head, circular magnetic, grating ruler, grating reading head, circular grating, digital display instrument, industrial intelligent controller and other physical sensors and other products. And it has leading advantages in terms of performance, stability and software algorithms!

◆ It has obtained dozens of patents and certificates, and passed the quality management system certification and CE certification. As a high-tech enterprise, we will invest heavily in R&D for a long time in order to maintain a competitive advantage in the market competition! Insist on creating value for users for a long time!

The service is refined, and good service can create more value for customers, and build a professional pre-sale, in-sale and after-sales service team

The production process is continuously optimized and upgraded to make the quality more stable. Keep improving and polishing the production process.。

With more than 10 years of R&D experience in the industry, we can provide customized R&D for customers and solve user pain points with more mature solutions. It is the selling point of the product with differentiation.。

Excellent products are the core of the company's development, and the innovative understanding, iteration and update of products provide users with the best product solutions.

Development course

Set sail
The company was founded

Since the establishment of the company, Hopo Technology has been committed to providing customers with excellent solutions with the core goal of developing high-performance and high-reliability intelligent sensors for measurement, rotation and displacement.

In the early days, the company successfully launched a series of competitive products with its keen insight into the market and profound accumulation of technology, and gradually established a good reputation in the industry.

Persistent pursuit
The road to innovation

With the continuous expansion of business and continuous innovation of technology, Hopo Technology has gradually developed into a high-tech enterprise integrating R&D, production, sales and service of gratings, magnetic grid encoders, instruments and controllers.

The company has not only established a complete R&D and innovation system, but also obtained dozens of patents and certificates, and its products have passed CE certification.

Steady growth
The path to growth

In the process of development, Hopo Technology has always adhered to the market demand-oriented, and constantly introduced new products and solutions to meet the market demand. At the same time, the company pays attention to the provision of customized services, conducts targeted research and development according to the specific needs of customers, and provides customers with a full range of solutions.

The service concept of customer demand as the center has enabled Huopu Technology to maintain a leading position in the market competition.

Challenge yourself • Climb to the top

Results
The road to development

The company has invested in self-purchased plants, standardized production lines, 12 years of experience in the field of magnetic grids, always adhere to strict standards and requirements, through continuous polishing and optimization, all products of the company have been independently developed and designed and continuously innovated and iterated on the process, with the characteristics of stability, anti-interference, short circuit and reverse polarity protection, to ensure the excellent performance and reliability of the products.

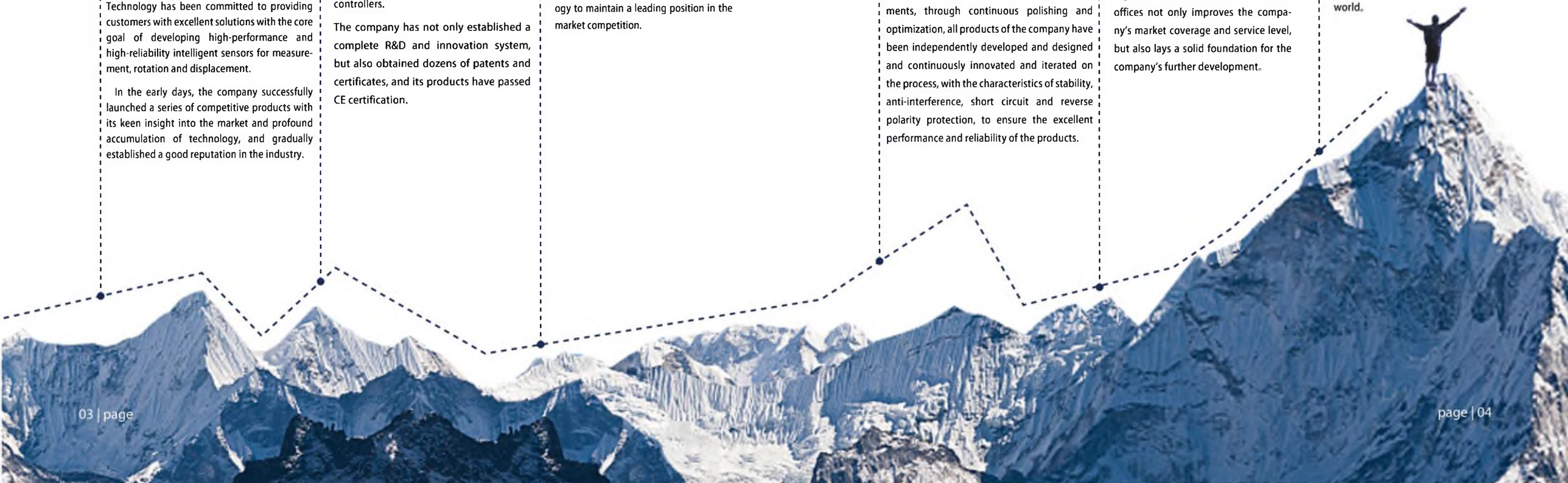
Forge ahead
The road to growth

With the rapid development of business and the continuous expansion of the market, Hopo Technology has set up four major offices in Shenzhen, Foshan, Nanjing, Jinan and Suzhou nationwide, in order to better serve customers and meet the market demand in different regions. The establishment of these offices not only improves the company's market coverage and service level, but also lays a solid foundation for the company's further development.

Looking to the future
The road to branding

Looking forward to the future, Huopu Technology will continue to uphold the concept of innovation, quality and service, continuously promote technological innovation and product upgrading, and expand a broader market space. At the same time, the company will also strengthen cooperation and exchanges with international counterparts, introduce advanced technology and management experience, and continuously improve its comprehensive competitiveness.

It is believed that in the near future, Huopu Technology will become a leading provider of intelligent sensor and control system solutions in the world.



Talent strong enterprise

Multi-dimensional leadership
People-oriented, beneficial enterprise
PEOPLE

Have both ability and political integrity, pay equal attention to internal and external, appoint people on the basis of merit, and compete fairly

Combined with the company's strategic development needs, echelon cultivation is adopted to improve the overall quality of employees

Reasonable authorization in employing people; Make the best use of their talents and develop in a diversified way

Expand the growth space of employees, protect the effective rights and interests of employees, and pay attention to the inner development of employees

Should have both political integrity and ability. attach equal importance to both intermal and external afairs, appoint peopleon their merits and compete fairly to the needs of strategic development of the cultivation is adopted to improve the qualityof employees. We should make full use of our talents and develop in a diversified way. the growth space of employeesprotect the effective rights and interests of employees. and pay attention to the inner development of employees.

Strong lineup Loyal to the enterprise
TEAMWORK

Cultural enterprise Cohesion
CULTURE

We pay more attention to the lives of our employees

While focusing on work efficiency and quality. we also pay attention to the spare time life of employees to ensure their living and working in peace and contentment. We care for our employees from the aspects of life, emotion and growth. The company's labor union has established a wealth of club activities. providing rich places and opportunities for the majority of employees to carry out healthy sports and entertainment activities according to their personal preferences。

Ingenuity endows elegance

THE PURSUIT OF QUALITY OF INGENUITY CASTING

- R&D
- Production
- Quality
- Services

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R & D strength

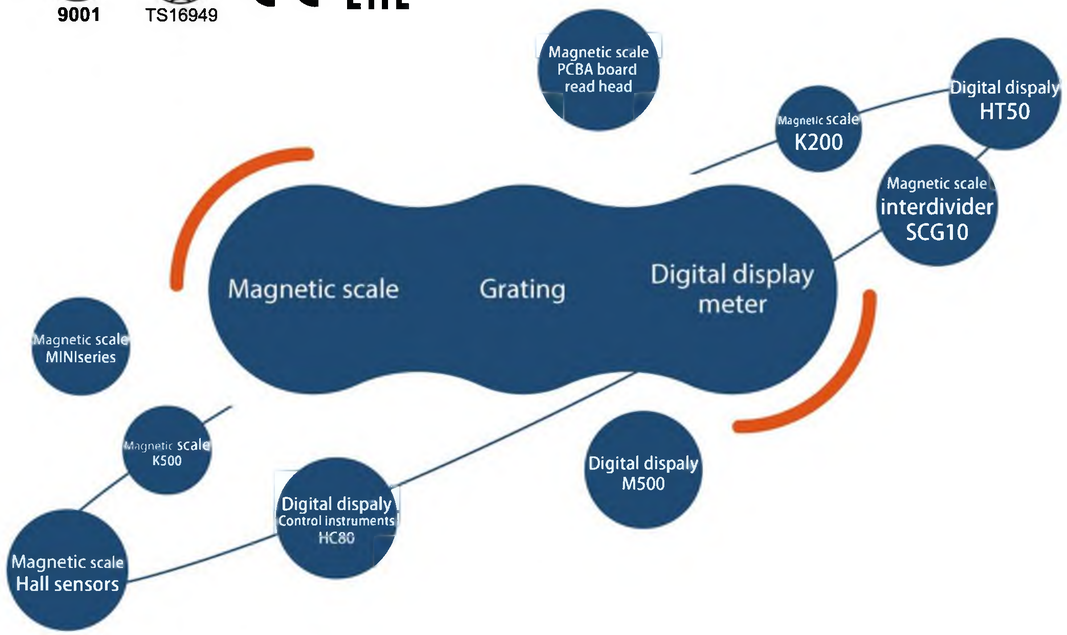
Nationally renowned patented technology

The patented technology enjoys national reputation

HoPo with R & D strength cast brilliant this is not only a slogan, but also always adhere to the belief and action criteria. Since its establishment, we know the importance of research and development strength for the development of enterprises, so we always take research and development as the core competitiveness of the company, and make every effort to invest in it.

The company has obtained dozens of patents and certificates. In the future, we will continue to adhere to the belief that R&D strength creates brilliance, constantly increase R&D investment, strengthen team building, promote technological innovation, and contribute more to the sustainable development of the company and the continuous improvement of user satisfaction.

ISO 9001 ISO TS16949 CE EAC



Research achievements

Professionalism builds strength

Master the core technology

Based on technology research and development, a complete R&D innovation system has been established, from the construction of R&D concepts, R&D processes and other systems, and cooperation with major scientific research institutions.

The company focuses on the R&D and manufacturing of high-performance and high-reliability measurement, rotation and displacement intelligent sensors, combined with the market demand and feedback of customers in advanced manufacturing, semiconductors, lithium batteries, photovoltaics, industrial robots and other professional fields, continuous innovation and accumulation, and has built a mature and diversified product line, including magnetic scale, magnetic grid reading head, circular magnetic grid, grating ruler, grating reading head, circular grating digital display instrument, industrial intelligent controller and other physical quantity sensors and other products. Leading edge in terms of stability and software algorithms!

As a high-tech enterprise, we will invest heavily in R&D for a long time in order to maintain a competitive advantage in the market competition! Insist on creating value for users in the long term!

Craftsmanship

12 years of deep cultivation in the field of magnetic grids, polishing high-quality, high-stability, high-precision products.

All products are constantly innovated and iterative, and high-precision integrated circuits are used to have the characteristics of stability, anti-interference, short circuit and reverse polarity protection.

Customization

According to the customer's needs, targeted research and development, a full range of solutions to meet the needs of the corresponding customers. Free sample test, free service, no risk commitment.

We can provide: OEM, ODM/OBM and other services.

Authority system certification

QUALITY——QUALITY SYSTEM AS THE CORNERSTONE

Authoritative certification
Escort development

The company has passed a number of strict and fair third-party certification systems; We not only attach importance to and pursue product quality, but also show that Huopu takes certification as the cornerstone, and constantly promotes its own development and growth of confidence and determination to convey our firm commitment to quality, reputation and sustainable development, but also provide a reliable guarantee and trust for customers and partners.

Service network

Build a national service network

Build an efficient service system throughout the country to provide customers with comprehensive and convenient services. At present, it covers many regions and cities such as Shenzhen,Foshan,Nanjing,-Suzhou and Jinan. To better meet the diverse needs of customers, enhance brand influence, and achieve sustainable development.

Efficient service. National coverage

Sharing is evolving

There is no best, only better,

With years of experience in the industry, we know what our customers really need.

We continue to forge ahead in product innovation,

Continuously improve the quality and cost-effective product line

A HIGHLY SOUGHT-AFTER PRODUCT RANGE

- Magnetic encoders
- Digital displays
- Optical sacles

Product Selection Matrix

MINI scale magnetic grid read heads

Customized PCBA bare board read head Ultra-small ultra-thin band origin

Scale read head with origin
Model：KNR200

Closed rail scale
Model：HB20

Magnetic levitation ring absolute encoder
Model：HCLA5

Absolute linear encoders
Model：HCA2000

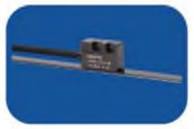
Absolute magnetic ring encoders
Model：HRA2000

High-precision stainless steel magnetic ring
Model：HDR系列

Hall Sensor/Customized
Model：LM系列

Rod motor encoders
Model：LMD系列

Inductive stator encoders
Model：LMS20/24/30/36



Magnetic grid read head
Model：LT200

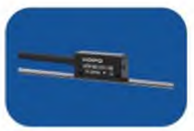
Dual-limit read head with origin
Model：LD200

Built-in origin with mounting bracket
Model：LR200

External origin gate read head
Model：LSR200

Linear modules are cost-effective
Model：LS200

Linear modules are cost-effective
Model：LH200



Linear modules are cost-effective
Model：LHR200

Linear modules are cost-effective
Model：LK200

Linear modules are cost-effective
Model：K200

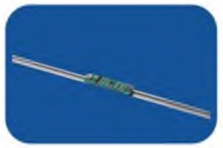
Automation 5-24V universal
Model：K500

Magnetic tape

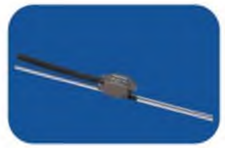
Magnetic scale series

Optical scale series

PCBA rotary grating
Model：LGMRB



PCBALinear gratings
Model：LGMB



Miniature gratings
Model：LGM64

Rotary raster discs
Model：LGMR64

Digital display series

Plastic case
2-axis 3-axis table

Aluminum alloy carved single-axis watch

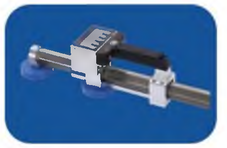
Magnetic grid digital display
Model：M500

Magnetic grid digital display
Model：M210

5-inch touch screen digital display
Model：HT50

Magnetic grid digital display
Model：M320

Magnetic grid controllers
Model：HC80



Wireless transmission of measuring rulers
Model：M535

Signal Processing module series of accessories

High-performance subdivision cassette
Model：SCG10

Pulse signal switcher
Model：ETX100

Absolute magnetic grid measurement module
Model：RM10

Isolated sine wave subdivider
Model：SCP10

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Magnetic scale series

- High reliability
- High precision
- Easy to install
- Good durability

Ultra-small size magnetic reading head MINI200 series

Suitable for small installation spaces

High precision, high subdivision, high anti-interference, good waveform

The LED indicator is easy to install and troubleshooting

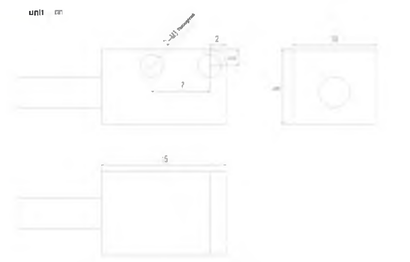
Wire: ultra-flexible more than 10 million times, drag chain line

Outbound mode: DB15

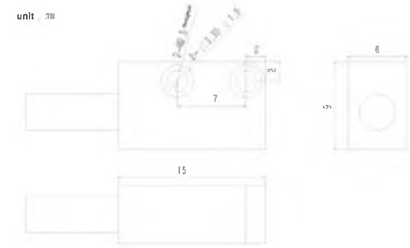
Common resolution: 0.5um 1um

color	red	black	green	purple	white	blue	yellow	brown	shield
Differential outputs	5V	GND/0V	A+	A-	B+	B-	Z+	Z-	enclosure
DB15 male	7	2	14	6	13	5	12	4	enclosure

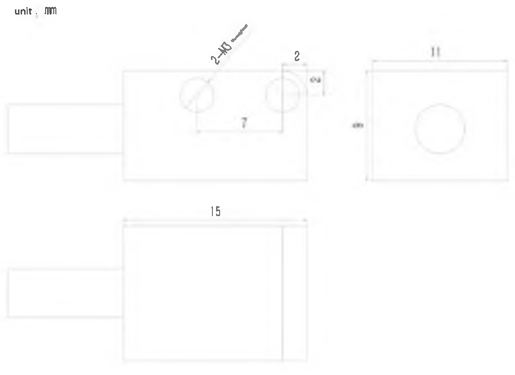
Features	Technical data	Supplement
Sensor material	Aluminum alloy	
Sensing distance	Mini200: Max.0.5mm, 0.3mm recommended	
Dimensions	15*9*10mm	
Mounting hole spacing	7mm	
Matching magnetic tape	MS20	
Wire length	0.5M 3M 5M	Customizable
Weight	80g	Under the 3-meter line configuration
Measure the length	50 meters	The voltage attenuation is < 1V at 5V supply
Operating voltage	5V	±5%
No-load current	5V:≤20mA	
Operating current	5V:≤50mA	
Signal characteristics	90°Phase difference square wave	Phase±0.5°
Output mode	TTLSquare wave pulse differential output	
Resolution	0.5um 1um	Other needs can be customized
Positioning accuracy	<30um	Laser interferometer determination
Repeatability	1-1.5um	Laser interferometer determination
Movement speed	Max.5m/s	Customizable
Ambient temperature	-5 ... 60°C	
Storage temperature	-10 ... 70°C	
Protection category	IP67 sensor	



MINI200



MINIX200



MINIR200

Product selection

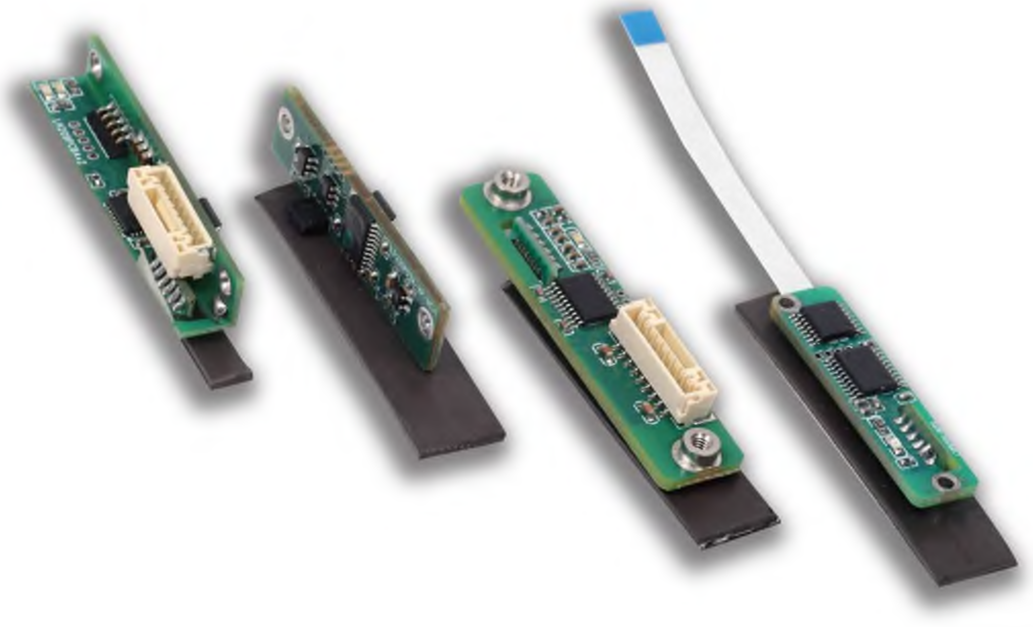
example: MINI 200 - 001 - 5 - 8 - 3m

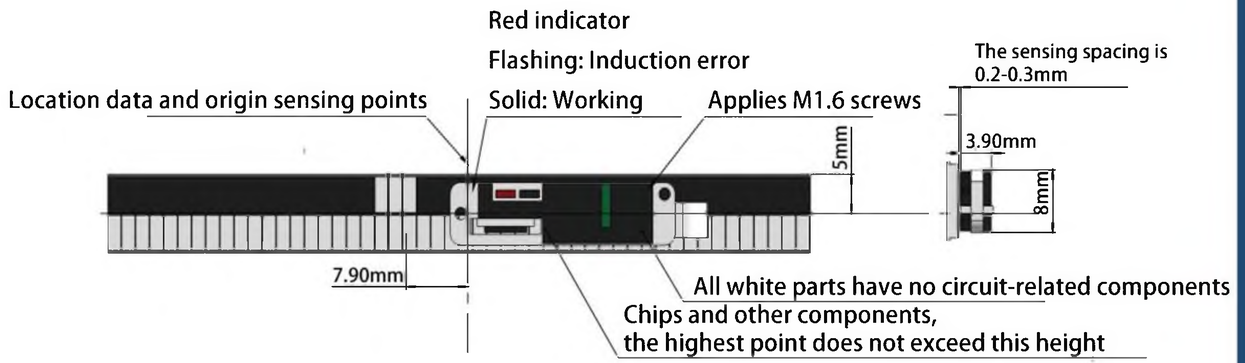
series	resolution	output	
	001:1um	8:8core	
Magnetic pole distance		voltage	Wire length
200:Grid pitch2mm		5:5V	3m:3meters
			0.5m:0.5meters

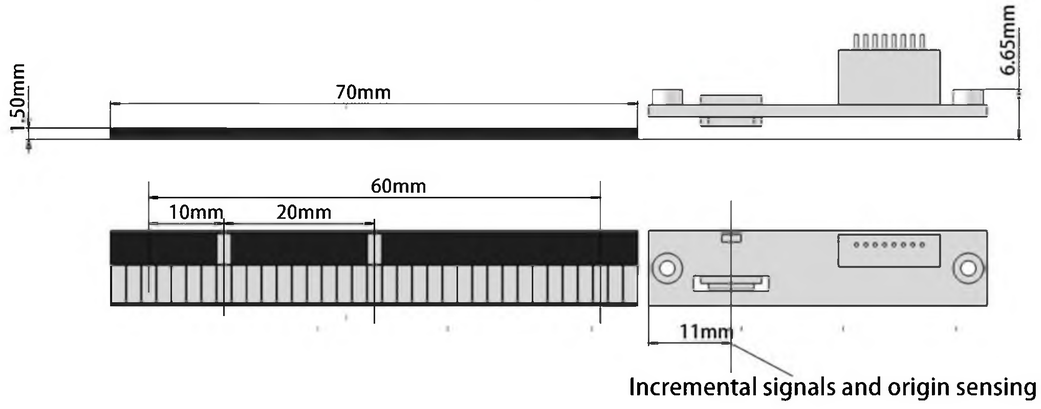
PCBA board reading head super small and thin

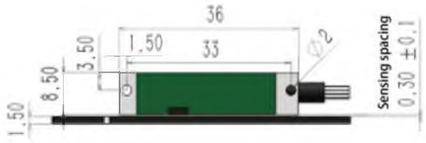
There are dozens of bare board magnetic&optical scale reading head models

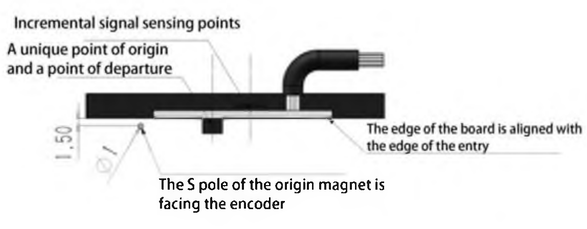
Other non-standard can be customized











The output line color corresponds to the signal

red:5v+、black：0V、green：A+、white：B+、yellow：Z+、purple：A-、blue：B-、brown：Z+

Incremental magnetic encoders
KNR200 series

The KN series encoder is a magnetic encoder for incremental linear motors, DD motors, and direct drive motors.

The built-in unique origin sensing module can output a unique Z signal in the whole stroke.

Under the resolution of 0.5um, it can ensure the high-speed operation and normal output of 8 m/s.

Industry standard RS422 signals, ± ABZ incremental digital signals, quadrature AB signals, and Z signals.

It is easy to install, integrates LED alarm indicator, and has a large sensing distance from the magnetic stripe and magnetic ring.

Ultra-flexible drag chain line, resistant to more than 20 million bending times.

Non-contact, can be used in harsh environments. The operating temperature range is -30° C to +80° C.

It has good resistance to shock, vibration and pressure. Compact size, sealed and waterproof IP68 housing.。

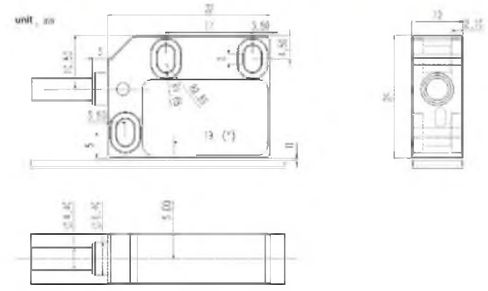
color	red	black	green	purple	white	blue	yellow	brown	shield
Differential outputs	5V	0V	A+	A-	B+	B-	Z+	Z-	enclosure
DB9male	5	9	4	8	3	7	2	6	enclosure
DB15male	7	2	14	6	13	5	12	4	enclosure

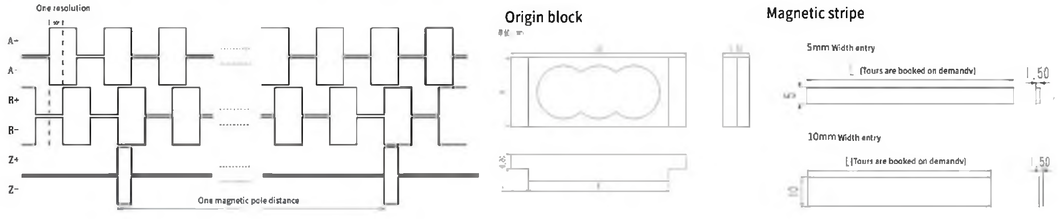
Technical Specifications:

Features	Technical data	Supplement
Operating voltage	5V	±5%
Current consumption	60mA (MAX)	25° room temperature
Resolution	0.5um (MAX)	Customizable
Output signal	±ABZ	Industrial RS422 standard
Positioning accuracy	≤50um	Laser interferometer determination
Repeatability	±1um	Laser interferometer determination
Maximum measurement length	50M	Depends on the magnetic stripe
Maximum speed	8m/s	0.5um resolution
Maximum cable length	30M	Laboratory voltage attenuation to:4.75V
Qualifying method	Direct outlet	Optional (DB9/DB15)
Sensor material	aluminium	CNCFinely carved
Sensing distance	<1mm	<0.5mmHighest precision
Dimensions	32*24*10MM	
Install the spacing between the empty spaces	17mm	
Matching magnetic tape	MS20、MSR20、MS20_5...	
Wire length	default0.5M	Customizable
Operating temperature	-30...80°C	
Storage life	-40...105°C	
Ingress protection	IP67	

Electrical connections

Cable specifications	
Cable type	TPU cable, energy chain-compatible, double-shielded, twisted-pair
Number of wires	8
Outside diameter	5.3 mm ±0.15 mm
Sheath material	TPU
Conducting wire	0.1 mm², 28 AWG, 0.38 Ω/m
Shielding rate	>98%
Durability	30 million cycles with a bend radius of 37 mm
Weight	34 g/m nominal
Bending (internal) radius	Dynamic 25 mm, static 10 mm





Your order key

example: KN 200 - 001 - 5 - 8 - 0.5m - DB9

- System model: KN / KNR
- Magnetic stripe pitch: 200:2mmGrid pitch; 100:1mmGrid pitch
- resolution: 001:1.0um; 0005:0.5um; 001:1um; 002:2um; 0025:2.5um; 005:5um
- Input voltage: 5:5V
- Output core: 8:8core ±ABZ; 6:6core ±AB; 5:5core ABZ; 4:4core AB
- Wire length: 0.5:0.5(default); 1:1m; 1.5:105m; 10:10mv
- Qualifying method: DB9:DB9Male; DB15:DB15Male; NC:Bare wire output

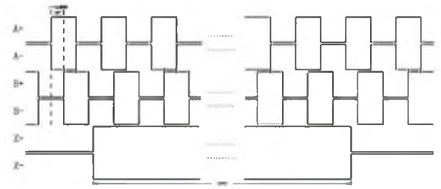
With the origin guide enclosed magnetic encoder HB20

0.5um 1um 5um high resolution
Multiple high-precision origin signals
Excellent seismic mechanical structure
Non-contact sensing is wear-free
LED signal indicator
It supports a wide range of voltage input and output
Extremely high resistance to contamination
High-precision bearings run without granularity
The ultra-flexible drag chain wire is bent more than 10 million times
Outgoing NC bare wire, DB9, DB15 and other customizations

color	red	black	green	purple	white	blue	yellow	brown	shield
Single-ended output PLC	5/24V	0	A+		B+		Z+		earthing
Differential outputs	5/24V	0V	A+	A-	B+	B-	Z+	Z-	enclosure
DB9male	5	9	4	8	3	7	2	6	enclosure

Technical Specifications:

Features	Technical data	Supplement
Sensor material	Zinc alloy Aluminum alloy	
Valid itinerary	170,220,270,320,370, 420,470,520,570.....	Others can be customized up to 1850mm
Mounting hole spacing	effective+120mm	
Wire length	default0.5M	Customizable
The weight of the whole machine	1.3kgitinerary 220mm	0.5 m line configuration
Configure the wires	Max.30M	The voltage attenuation is < 1V at 5V supply
Magnetic tape	2mm	
Operating voltage	DC5-24V	±5%
No-load current	5V:≤30mA	
Operating current	5V:≤50mA	
Signal characteristics	90°Phase difference square wave	The phase difference ± 0.5°
Output mode	RS232, RS422	
Resolution	1um、5um、10um、25um....	Other needs can be customized
Positioning accuracy	±20um	
Repeatability	±1 resolution	
Movement speed	Max.150m/min	Customizable
Acceleration	Max.29.4m/s²	
Ambient temperature	-5 ... 60°C	
Storage temperature	-10 ... 70°C	
Ingress protection	IP67 sensor	

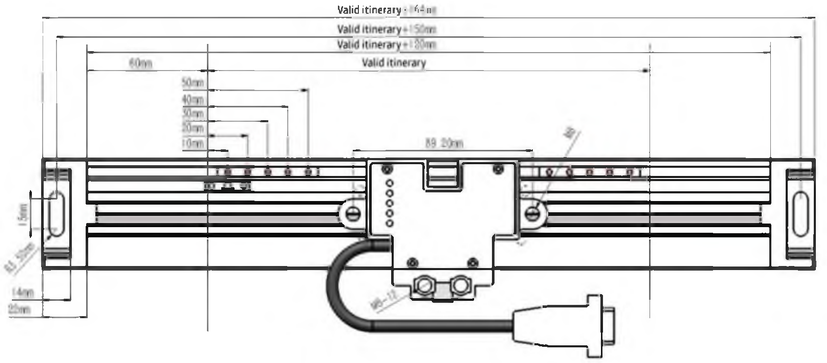


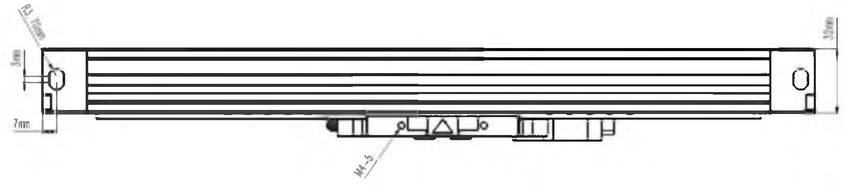
Magnetic scale ordering parameters

example: HB 20 - 005 - 5 - 8 - 220 - 0.5m - DB9

Model resolution	output	Wire length
001:1um	4:4core	0.5m:0.5m
005:5um	5: 5core	3m:3m
	8:8core	6m:6m

voltage	itinerary	Output type
5:5V	170:170mm	
24:24V	220:220mm	
	270:270mm	
	320:320mm	
	370:370mm	





Magnetic levitation ring line absolute encoder HCLA5

A true absolute value system

It is suitable for magnetic levitation annular line and adapts to the complex working conditions of flexible line

High-speed, multi-mover slider operation

Resolution up to 1 μm

The maximum trolley is up to 1 m

Measuring speed 5 m/s

The maximum crossing speed is 5 m/s

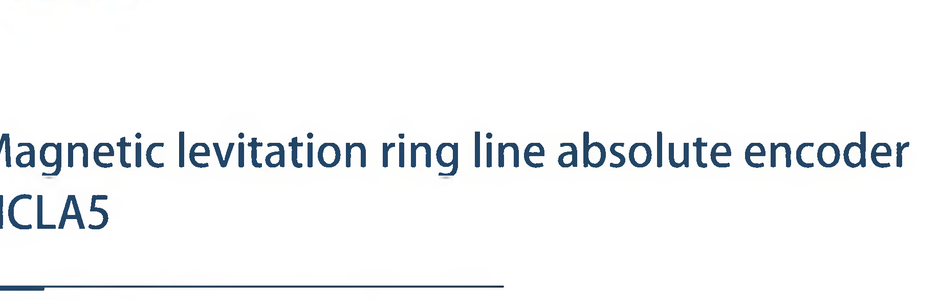
Maximum installation clearance 1.6 mm, 1.2 mm recommended,

SSI / BiSS-C / Tamagawa / Panasonic / MODBUS-RTU and other communication protocols

Ultra-slim form factor design

The ultra-flexible drag chain wire is bent more than 20 million times

Support No. 1 trolley marking

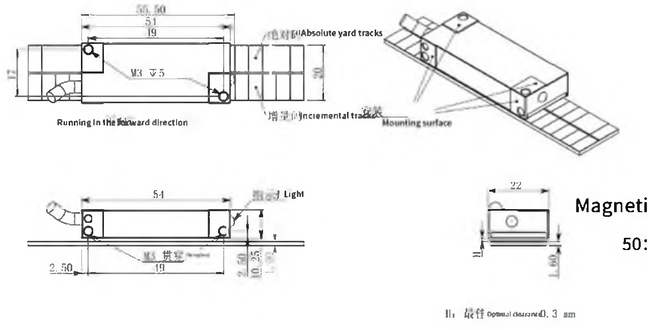


15-pin D-type	2/9	4	5	6	7/8	12	13	14	enclosure
Cable color	black	brown	blue	purple	red	yellow	white	green	Shielded wire PE
BISS	-	-	MA-	SLO-	-	-	MA+	SLO+	
SSI	GND (0V)	485-A(For debugging)	CLK-	DATA-	+VIN (5V)	485-A(For debugging)	CLK+	SATA+	
Tamagawa	-	A/485_B	-	-	-	A/485_A	-	-	

9-pin D-type	2	3	4	5	6	7	8	9	enclosure
Cable color	yellow	white	green	red	brown	blue	purple	black	Shielded wire PE
BISS	-	MA+	SLO+	-	-	MA-	SLO-	-	
SSI	485A(For debugging)	CLK+	DATA+	+VIN (5V)	485-B(For debugging)	CLK-	DATA-	GND(0V)	
Tamagawa	A/485_B	-	-	-	A/485_A	-	-	-	

Technical Specifications

Features	Technical data	Supplement
Operating voltage	5v	±5%
Current consumption	150mA (MAX)	25° room temperature
Resolution	1um	
Repeatability	<2um	
Maximum Measurement length	1m	
Maximum speed	5m/s	
Crossing speed	5m/s	
Power-up Initialization time	< 350ms	After initialization, the encoder will start responding according to the communication protocol
Maximum cable length	10M	
Qualifying method	Direct outlet	Optional (DB9/DB15)
Sensing distance	< 1.6 mm	1.2 mm optimum
Dimensions	44*37*7.66mm	
Matching magnetic tape	MSA50 series	Absolute dual track stripe width 20mm
Wire length	Default 0.5 meters	Customizable
Operating temperature	-5 ... 70°C	
Storage temperature	-25 ... 105°C	
Ingress protection	IP67	Epoxy resin potting process



Electrical connections

Cable specifications	
Cable type	TPU cable,energy chain-compatible,double-shielded,twisted-pair
Number of wires	8
Communication interfaces	DC,SC,SP
Outside diameter	4.4 mm ±0.15 mm
Sheath material	TPU
Conducting wire	0.08 mm2, 28 AWG, 0.38 Ω/m
Shielding rate	90%
Durability	30 million cycles with a bending radius of 35 mm
Weight	34 g/m nominal
Bending (internal) radius	Dynamic 25 mm, static 10 mm

Magnetic scale ordering parameters

example: MSA 50 - 11 - 200

- Encoding
  - A: Absolute
- Magnetic stripe pitch
  - 50: 5mm
- Magnetic distance
- Absolute-encoded length
  - 6: The maximum measuring stroke is320mm
  - 8: The maximum measuring stroke is1280mm
- Magnetic stripe length(in mm)

Encoder ordering parameters

example: HCLA5 - 001 - 26 - B - 6 - 0.5-NC

- resolution
  - 001:1.0um(Default)
  - 0025:2.5um
  - other resolutions
- Packet length
  - 26: Location information accounts for 26 bits
  - XX: Other special needs
- Signal output (custom option)
  - M:modbus-rtu
  - B:BISS(Default)
  - S:SSI
  - D:Tamawaga
- Absolute-encoded length
  - 6: The maximum measuring stroke is320mm
  - 8: The maximum measuring stroke is1280mm
- Cable Exit Method (Customized Option)
  - x.xNC:x.xm bare wire output (default)
  - x.xDB9:x.xmDB9 output
  - x.xDB15:x.xmDB15output

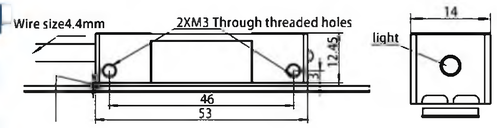
Absolute value magnetic reading head
HCA2000

Absolute position dual track measurement
Excellent resistance to contamination
External LED installation indicator
High resolution, high precision
Intelligent error message prompt
The ultra-flexible drag chain wire is bent more than 20 million times
Outgoing NC bare wire, DB9, DB15, and others can be customized

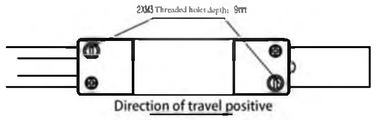
color	red	black	green	purple	white	blue	yellow	brown	PE
BISS-C	Vcc	GND	SLO+	SLO-	MA+	MA-	485-A	485-B	Shielded wires
SSI	Vcc	GND	DATA+	DATA-	CLK+	CLK-	485-A	485-B	Shielded wires
DB9	5	9	4	8	3	7	2	6	enclosure
DB15	7,8	2,9	14	6	13	5	12	4	enclosure

Technical Specifications

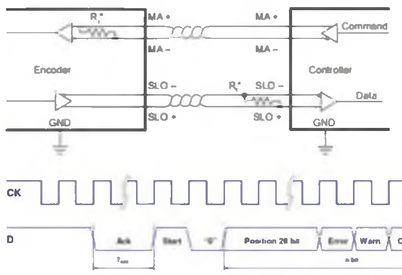
Features	Technical data	Supplement
Operating voltage	5v	±5%
Current consumption	150mA (MAX)	
Resolution	0.1-100um	Optional
Location data interface	BISS-C / (SSI)	
Positioning accuracy	<60um	Laser interferometer measurement (sensing distance 0.2mm)
Repeatability	±2resolution	Laser interferometer measurement (sensing distance 0.2mm)
Output interface	BISS-C;SSI	Optional (Default BISS-C)
SSI clock frequency input	≤750KHz	Depends on the cable length
Maximum measurement length	16m	Other lengths (e.g. 0.5m; 1m · · · can be customized 16.3m)
Maximum speed	6.5m/s	
Maximum cable length	10m	Optional (DB9/DB15)
Qualifying method	Direct outlet	
Sensor material	aluminium	
Sensing distance	(1.3+/-0.1mm(Max0.6)	
Dimensions	53*14*12.5mm	
Mounting hole spacing	46mm	
Matching magnetic tape	MSA20	Customizable
Wire length	default0.5M	
Operating temperature	-5 ... 70°C	
Storage temperature	-25 ... 125°C	
Ingress protection	IP67 sensor	



Installation spacing0.2~0.6



❖ The electrical connections are as follows(BISS-C)



Product selection

example: HCA 2000 - 001 - 26 - B - 13 - 0.5-NC

- Magnetic pole distance
  - 2000: Grid pitch2mm
- resolution
  - 0001:0.1um
  - 0005:0.5um
  - 001:1.0um
  - 0025:2.5um
  - and other resolutions
- 26: 26 bits of data
- Signal output
  - B:BISS
  - S:SSI
  - M:MODBUS-RTU
  - The following follow-up support is supported
  - D:Tama River
  - E:Endat
  - P:Panasonic
- Valid itinerary
  - 11:Valid itinerary4m
  - 13:Valid itinerary16m
- Qualifying method
  - x.xNC:x.xMBare wire
  - x.xDB9:x.xMDB9
  - x.xDB15:x.xMDB15

Magnetic tape selection

MSA 20 - 11 - 1000

- Encoding
  - -A: Absolute
- Magnetic stripe pitch
  - -20: 2mm magnetic pitch
- Encoding type
  - 6: Max.128mm
  - 11: Max.4.09m
  - 13: Max.16.384m
- Magnetic stripe length (in mm)

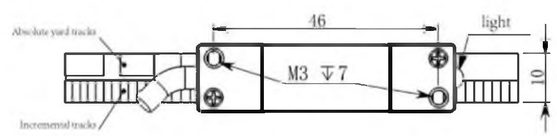
Absolute magnetic ring encoders
HRA2000

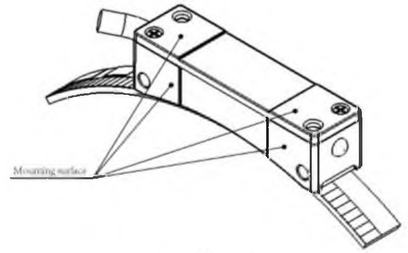
Extra-large medium holes

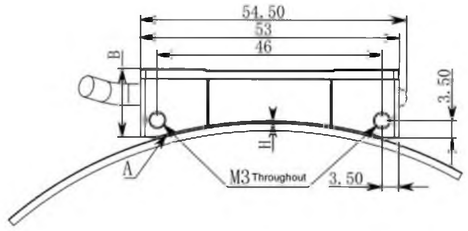
Lap absolute value

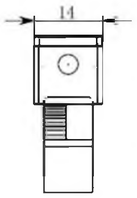
Super stain resistant

color	red	black	green	purple	white	blue	yellow	brown	PE
BISS-C	Vcc	GND	SLO+	SLO-	MA+	MA-	485-A	485-B	Shielded wires
SSI	Vcc	GND	DATA+	DATA-	CLK+	CLK-	485-A	485-B	Shielded wires
DB9	5	9	4	8	3	7	2	6	enclosure
DB15	7,8	2,9	14	6	13	5	12	4	enclosure









H: Induction distance 0.1mm~0.6mm, best 0.3mm±0.1mm

Note: Specific sizes vary depending on the outer diameter, as detailed in the table below:

Technical Specifications

Features	Technical data	Supplement
Operating voltage	5v	±5%
Current consumption	150mA (MAX)	
Resolution	0.1-100um	Optional
Location data interface	BISS-C / (SSI)	
Positioning accuracy	<60um	Laser interferometer measurement (sensing distance 0.2mm)
Repeatability	±2resolution	Laser interferometer measurement (sensing distance 0.2mm)
Output interface	BISS-C;SSI	Optional (Default BISS-C)
SSI clock frequency input	≤750KHz	Depends on the cable length
Maximum measurement length	16m	Other lengths (e.g. 0.5m; 1m · · · can be customized 16.3m)
Maximum linear speed	6.5m/s	
Maximum cable length	10m	Optional (DB9/DB15)
Qualifying method	Direct outlet	
Sensor material	aluminium	
Sensing distance	0.3+/-0.1mmMax0.6)	
Dimensions	53*14*12.5mm	
Mounting hole spacing	46mm	
Wire length	default0.5M	
Operating temperature	-5 ... 70°C	
Storage temperature	-25 ... 125°C	
Ingress protection	IP67 sensor	

Model	Outside diameter	Inner diameter	Number of poles	width	Grid pitch
HDA61-45-96	61.15	45	96	10	2
HDA72-54-114	72.61	54	114	10	2
HDA82-68-128	81.53	68	128	10	2
HDA122-106-192	122.29	106	192	10	2
HDA163-140-256	163	140	256	10	2
HDA204-187-320	203.82	187	320	10	2
HDA327-307-512	327	307	512	10	2

With the origin and high precision magnetic ring HDR series

The mounting hole is fixed, with a unique zero position, and the zero return accuracy is high

It is used for high-precision angle feedback, such as DD motors, etc

The repeatability is between ±3-10 arc seconds, and the larger the diameter, the higher the accuracy

- Equipped with a reading head with an origin: MINIR200,LHR200
- With a reading head without origin: LH200,MINI200

Parameter model and number of lines are selected (Any number of lines can be output)

Model	HD5180	HD6196	HD72114	HD82128	HD122192	HD150236	HD204320	HD229360	HD344540
Outside diameter	50.96	61.15	72.61	81.53	122.29	150	203.82	229	344
Inner Diameter (Tolerance H7)	30	45	54	68	106	130	187	209	310
Width	7.5	10	10	10	10	10	10	10	10
Number of poles	80	96	114	128	192	236	320	360	540
Pole width	2	2	2	2	2	2	2	2	2
Maximum number of lines	80000	96000	114000	128000	192000	236000	320000	360000	540000
Minimum number of threads	80	96	114	128	192	236	320	360	540

The number of lines is the number of pulses before the 4 octave, and the total value (pulse) of one revolution is the number of lines X4

$$\text{Repeatability} < \frac{2592000}{\text{Number of threads} \times 4}$$

Positioning accuracy is linked to resolution. < 500 arcsee at high resolution

When the resolution > 250 arcsee, the positioning accuracy ≈ ± 1 resolution

$$\text{Positioning accuracy (arcsee)} \approx \frac{1296000}{\text{The number of poles} \times \text{the width of the poles} \div 0.04}$$

$$\text{resolution (um)} = \frac{\text{The number of poles} \times \text{total length of poles} \times 1000}{\text{Number of threads} \times 4} \qquad \text{resolution (arcsee)} = \frac{1926000}{\text{Number of threads} \times 4}$$

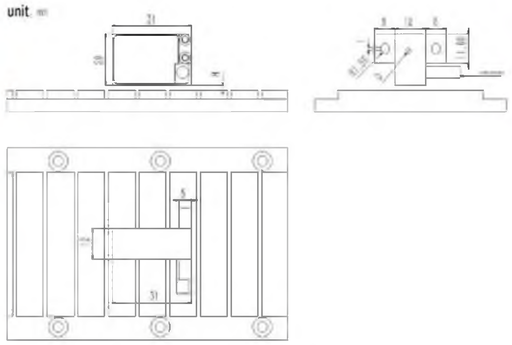
Direct drive motor hall sensor
LM-N series

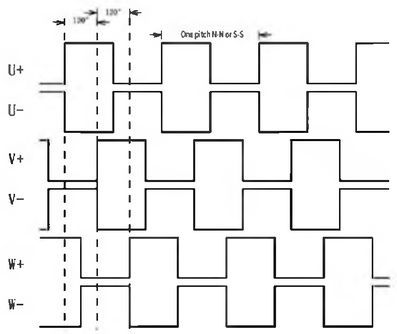
The LM-N is a dedicated encoder for direct drive motors.
It can ensure the normal output under high-speed operation of 5 m/s.
Industry standard RS422 signal.
Easy to install, with LED power indicator, sensing spacing up to 2mm.
Ultra-flexible drag chain line, resistant to more than 20 million bending times.
Non-contact, can be used in harsh environments. The operating temperature range is -10° C to +80° C.
It has good resistance to shock, vibration and pressure. Compact size, sealed and waterproof IP68 housing.

Double-row DB9	1	2	3	4	6	7	8	9	enclosure
Cable color	red	green	white	yellow	black	purple	blue	brown	shield
Differential interfaces	5V+	U+	V+	W+	0V	W-	V-	W-	
Single-ended interface	5V+	U	V	W	0V	-			

Technical Specifications

Features	Technical data	Supplement
Operating voltage	5V	±5%
Current consumption	3mA	25° room temperature
Applicable pole distance	20、24、30、32...	Pole distance N-N or S-S others can be customized
Output signal	±UVW	Industrial RS422 standard
Maximum cable length	30M	Laboratory voltage attenuation to 4.75V
Qualifying method	Direct outlet	Optional (DB9/DB15)
Sensor material	aluminium	CNCFinely carved
Sensing distance	2mm ±0.5mm	Protective steel belts are not included
Dimensions	33*15*10MM	
Mounting hole spacing	26mm	
Wire length	default0.5M	Customizable
Operating temperature	-5 ... 70°C	
Storage life	-20 ... 105°C	
Ingress protection	IP67	





Electrical connections

	Cable specification
Cable type	TPU cable, energy chain-compatible double-shielded, twisted-pair
Number of wires	8
Outside diameter	5.3 mm ±0.15 mm
Sheath material	TPU
Conducting wire	0.1 mm², 28 AWG, 0.38 Ω/m
Shielding rate	>98%
Durability	30 million cycles with a bend radius of 37 mm
Weight	34 g/m nominal
Bending (internal) radius	Dynamic 25 mm, static 10 mm

Product selection

example: LM 24 - 8 - 5 - 0.5 - NC

Serial models

Stator pitch
20:20mmPitch (N-N or S-S)
24:24mmPitch
30:30mmPitch
32:32mmPitch
36:36mmPitch

Output signal
8:±UVW Differential outputs
5:UVW Single-ended output

Input voltage
5:5V

Wire length
0.5:0.5(Default Length)
1:1m
1.5:1.5m
10:10m

Qualifying method
NC:Bare wire output
DB9:DB9Male

Encoder for incremental rod motors
LMD series

The LMD series is an encoder for incremental rod motors with stator rods as position feedback.

Adapt to any stator pitch, up to 1um resolution

Industry standard RS422 signal, ± ABZ incremental digital signal.

Easy to install with integrated LED indicators.

Ultra-flexible drag chain line, resistant to more than 20 million bending times.

Non-contact, can be used in harsh environments. The operating temperature range is -10° C to +80° C.

It has good resistance to shock, vibration and pressure. Compact size, sealed and waterproof IP68 housing.

DB15	2	4	5	6	7	12	13	14	enclosure
Line color	black	brown	blue	purple	red	yellow	white	green	shield
Signal	0V	Z-	B-	A-	5V	Z+	B+	A+	
DB9	2	3	4	5	6	7	8	9	enclosure
Line color	yellow	white	green	red	brown	blue	purple	black	shield
Signal	Z+	B-	A+	5V	Z-	B-	A-	0V	

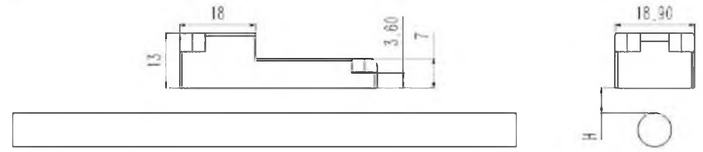
Technical Specifications

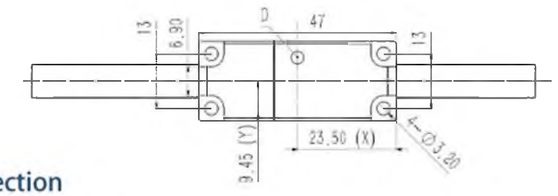
Features	Technical data	Supplement
Operating voltage	5V	±5%
Current consumption	60mA (MAX)	25° room temperature
Resolution	1um (MAX)	The default is 1um
Output signal	±ABZ	Industrial RS422 standard
Positioning accuracy	≤500um	determined by the magnet placement accuracy of the stator bar
Repeatability	±3um	
Maximum speed	5m/s	
Maximum cable length	30M	Laboratory voltage attenuation to 4.75V
Qualifying method	Direct outlet	Optional (DB9/DB15)
Sensor material	aluminium	CNC carving
Sensing distance	1/4Pitch width	
Dimensions	47*18.9*13mm	
Mounting hole spacing	41*13mm	
Applicable pitch	20、24、30、32...	N-N or S-S width
Wire length	default0.5m	Customizable
Operating tempera-	-5 ... 70°C	
ture	-20 ... 105°C	
Storage life	IP67	
Ingress protection		

Electrical connections

Cable specification	
Cable type	TPU cable, energy chain-compatible double-shielded, twisted-pair
Number of wires	8
Outside diameter	5.3 mm ±0.15 mm
Sheath material	TPU
Conducting wire	0.1 mm², 28 AWG, 0.38 Ω/m
Shielding rate	>98%
Durability	30 million cycles with a bend radius of 37 mm
Weight	34 g/m nominal
Bending (internal) radius	Dynamic 25 mm, static 10 mm

unit : mm





Product selection

example: LMD 24 - 8 - 5 - 0.5 - NC

Serial models

Stator pitch
- 20:20mmPitch (N-Nor S-S)
- 24:24mmPitch
- 30:30mmPitch
- 32:32mmPitch
- 36:36mmPitch

Output signal
- 8:±UVW Differential outputs
- 5:UVW Single-ended output

Input voltage
- 5:5V

Wire length
- 0.5:0.5(Default Length)
- 1:1m
- 1.5:1.5m
- 10:10m

Qualifying method
- NC:Bare wire output
- DB9:DB9Male
- DB15:DB15Male

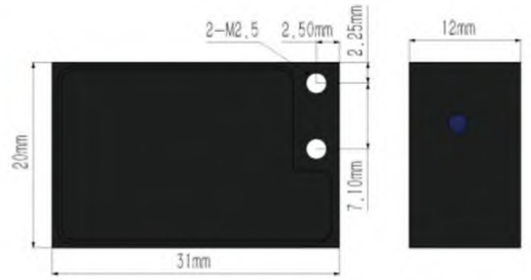
Induction stator magnetic encoder
LMS20/24/ 30/ 32/ 36

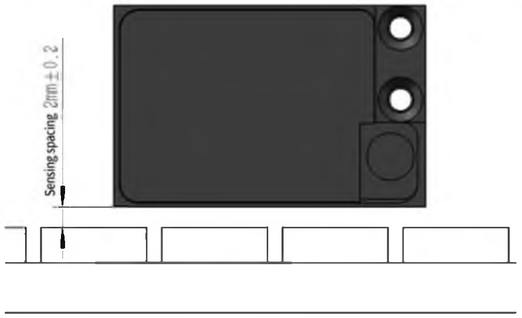
1um High Resolution Direct Sensing Stator NC: Bare wire output
Support stator pitch 20, 24, 30, 32, 36, etc
Other sizes can be customized
Ultra-high operating speed of up to 5m/s
Excellent anti-contamination capability with external LED mounting calibration indicator
Standard RS422 output
Differential ABZ and single-ended UVW commutation signals are output
The repeatability can reach 3um
The ultra-flexible drag chain wire is bent more than 20 million times
Outgoing NC bare wire, DB15, and others can be customized

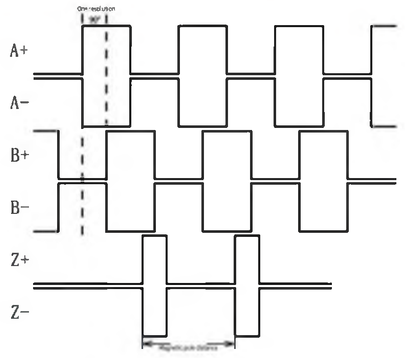
color	red	black	green	purple	white	blue	yellow	brown	pink	grey	Transparent	PE
Differential outputs	5V	GND	A+	A-	B+	B-	Z+	Z-	U	V	W	shield
Three-row DB15 male	1	11	2	12	3	13	4	14	8	9	10	enclosure

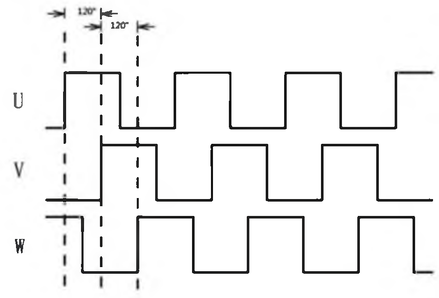
Technical Specifications

Features	Technical data	Supplement
Sensor material	aluminium	
Sensing distance	2mm	Protective plate is not included
Dimensions	31*20*12mm	Mounting plate not included
Induction pitch	20mm、24mm	Please refer to the detailed explanation for the pitch description
Wire length	default3M	Customizable
Weight	150g	3-meter line configuration
Measure the length	50m	The voltage attenuation is < 1V at 5V supply
Operating voltage	5V	±5%
No-load current	5V:≤30mA	
Operating current	5V:≤120mA	
Position signals	±A、±B	
Commutation signals	UVW	
Output mode	RS422	
Resolution	1um	Other needs can be customized
Positioning accuracy	<300um	Laser interferometer determination
Repeatability	±2um	Laser interferometer determination
Movement speed	Max.5m/s	Customizable
Ambient temperature	-5 ... 70°C	
Storage temperature	-25 ... 125°C	
Ingress protection	IP67 sensor	









Product selection

example: LMS 20 - 001 - 5 - 11 - 0.5m - DB15

- Serial models
- Stator pitch: 20:pitch20mm; 24:pitch24mm; 30:pitch30mm; 32:pitch32mm; 36:pitch36mm
- resolution: 001:1um
- voltage: 5:5V
- output: 11:11cores
- Wire length: 3m:3m; 0.5m:0.5m
- Output type: DB15:Three-row DB15 male; NC:Bare wire output

Magnetic encoder for incremental linear motors LT200

The LT200 is an incremental linear motor, DD motor, magnetic grid encoder for direct drive motors.

Under the resolution of 0.5um, it can ensure the high-speed operation and normal output of 8 m/s.

Industry standard RS422 signal, ± ABZ incremental digital signal. Quadrature AB signal as well as a periodic Z signal of 2 mm.

It is easy to install, integrates LED alarm indicator, and has a large sensing distance from the magnetic stripe and magnetic ring.

Ultra-flexible drag chain line, resistant to more than 20 million bending times.

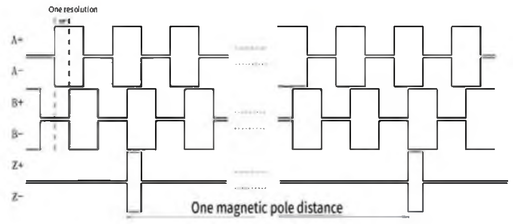
Non-contact, can be used in harsh environments. The operating temperature range is -30° C to +80° C.

It has good resistance to shock, vibration and pressure. Compact size, sealed and waterproof IP68 housing.

DB15	2	4	5	6	7	12	13	14	enclosure
Line color	black	brown	blue	purple	red	yellow	white	green	shield
Signal	0V	Z-	B-	A-	5V	Z+	B+	A+	
DB9	2	3	4	5	6	7	8	9	enclosure
Line color	yellow	white	green	red	brown	blue	purple	black	shield
Signal	Z+	B-	A+	5V	Z-	B-	A-	0V	

Technical Specifications

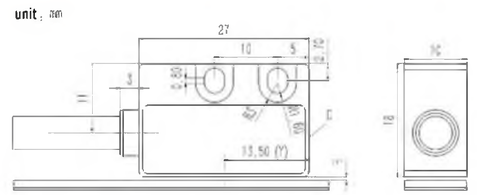
Features	Technical data	Supplement
Operating voltage	5V	±5%
Current consumption	60mA (MAX)	25° room temperature
Resolution	0.5um (MAX)	Customizable
Output signal	±ABZ	Industrial RS422 standard
Positioning accuracy	≤50um	Laser interferometer measurement
Repeatability	±1um	Laser interferometer measurement
Maximum measurement length	50M	Depends on the magnetic stripe
Maximum speed	8m/s	0.5um resolution
Maximum cable length	30M	Laboratory voltage attenuation to 4.75V
Qualifying method	Direct outlet	Optional (DB9/DB15)
Sensor material	aluminium	CNCFinely carved
Sensing distance	<1mm	<0.5mm is the most accurate
Dimensions	30*18*10mm	
Mounting hole spacing	10mm	
Matching magnetic tape	MR20	
Wire length	default0.5m	Customizable
Operating temperature	-30 ... 80°C	
Storage life	-40 ... 105°C	
Ingress protection	IP67	

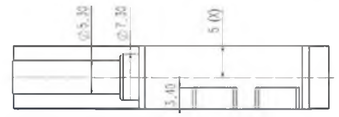


Electrical connections

Cable specifications	
Cable type	TPU cable, energy chain-compatible, double-shielded, twisted-pair
Number of wires	8
Outside diameter	5.3 mm ±0.15 mm
Sheath material	TPU
Conducting wire	0.1 mm2, 28 AWG, 0.38 Ω/m
Shielding rate	>98%
Durability	30 million cycles with a bend radius of 37 mm
Weight	34 g/m nominal
Bending (internal)	Dynamic 25 mm, static 10 mm

unit：mm





Magnetic stripe model

MS 20 - 10 - 3000
A B C D

B:Magnetic stripe pitch

20: 2mm magnetic pole distance
10: 1mm magnetic pole distance

A:System model

MS:Incremental magnetic stripe

C:Magnetic stripe type

10: 10mm width

D:The total length of the magnetic stripe

10:10mm
200:200mm
3000:3000mm

Product selection

example: LT 200 - 001 - 5 - 8 - 0.5 - NC

Serial models

Magnetic stripe pitch
200:2mmpitch
100:1pitch

resolution
0001:0.1um (With 1mm pitch magnetic stripe)
0005:0.5um
001:1um
002:2um
0025:2.5um
005:5um

Input voltage
5:5V

Output core
8:8core ±ABZ
6:6core ±AB
5:5core ABZ
4:4core AB

Wire length
0.5:0.5(Default Length)
1:1m
1.5:1.5m
10:10m

Qualifying method
NC:Bare wire output
DB9:DB9Male
DB15:DB15Male

With origin and limit function
LD200 series

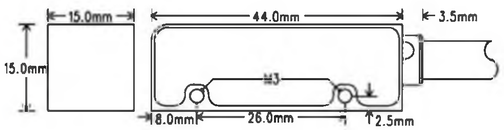
Housing: Aluminum alloy black oxide
Read head with displacement origin and 2-end limit
Save 3 photoelectric switches to make the structure more stable
High precision, high subdivision, high anti-interference, good waveform
The LED indicator is easy to install and troubleshooting
Wire: ultra-flexible more than 10 million times, drag chain line.
Cable outgoing mode: NC bare wire, DB15, others can be customized
Common resolution: 1um
Repeat positioning accuracy: ±1um

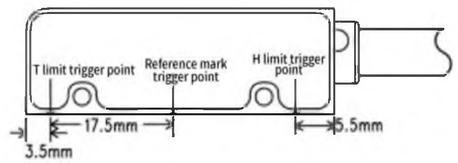
color	red	black	green	purple	white	blue	yellow	brown	Blue	Aqua	orange	gray	pink	PE
Differential outputs	DVCC	DGND	A+	A-	B+	B-	Z+	Z-	AVCC	AGND	R	H	T	shield
DB15 male	7	2	14	6	13	5	12	4	8	1	3	10	11	Housing

DVCC and DGND are 5V for the encoder side, and AVCC and AGND are 5-24V for I0. T, H: limit signal. R: The IO of the synchronous Z-term signal identifies the zero signal

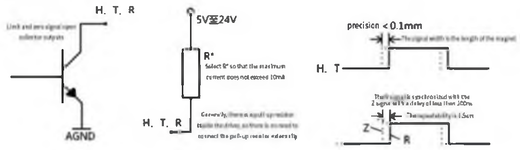
Technical Specifications

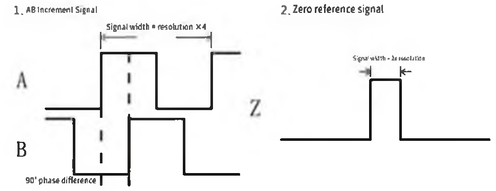
Features	Technical data	Supplement
Sensor material	Aluminum alloy carving	
Sensing distance	0.3mm±0.2	
Dimensions	42*15*15mm	25*22*10 (LK200)
Mounting hole spacing	26mm	10mm (LK200)
Zero magnet size	2mm diameter 1.5mm thickness cylindrical	
Limit magnets	1*2*5mm cuboid	
Matching magnetic tape	MS20、MS10	
Wire length	Default 3M	Customizable
Weight	180g	3-meter line configuration
Measure the length	50M	The voltage attenuation is < 1V at 5V supply
Operating voltage	5V	±5%
No-load current	5V: ≤35mA	
Operating current	5V: ≤65mA	
Signal characteristics	90° phase difference square wave	Phase±0.5°
ABZ signal output mode	TTL	
Left and right limit signal	Open collector	
Output mode	output	
Resolution	1um	Other needs can be customized
Positioning accuracy	<30um	Laser interferometer determination
Repeatability	1-1.5um	Laser interferometer determination
Movement speed	Max.5m/s	Customizable
Ambient temperature	-5 ... 60°C	
Storage temperature	-10 ... 70°C	
Ingress protection	IP67 sensor	





❖ Limit and zero signals





Product selection

example: LD 200 - 001 - 5 - 13 - 0.5m - DB15

- Magnetic pole distance: 2000: Grid pitch 2mm
- resolution: 001:1um
- voltage: 5:5V
- output: 13:13 cores
- Wire length: 3m:3m; 0.5m:0.5m
- Output type: DB15

With unique origin
LSR200/LR200 series

Shell: Aluminum alloy black oxide
High precision, high subdivision, high anti-interference, good waveform
The LED indicator is easy to install and troubleshooting
Wire: ultra-flexible more than 20 million times, drag chain line
Cable outgoing mode: NC bare wire, DB9, DB15
Common resolution: 0.5um 1um
Repeat positioning accuracy: ±1um

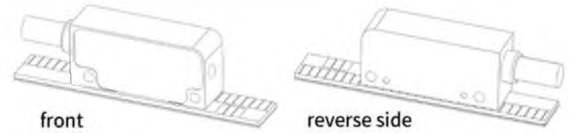
color	red	black	green	purple	white	blue	yellow	brown	shield
Differential outputs	5V	GND/0V	A+	A-	B+	B-	Z+	Z-	enclosure
DB9male	5	9	4	8	3	7	2	6	enclosure
DB15male	7	2	14	6	13	5	12	4	enclosure

Technical Specifications

Features	Technical data	Supplement
Sensor material	Aluminum alloy	
Sensing distance	Recommended within 0.5 mm (0.3 mm accuracy is the highest)	
Dimensions	34*15*10mm	
Mounting hole spacing	26mm	
Matching magnetic tape	MS20	
Wire length	The default is 0.5M	Customizable
Weight	150g	3-meter line configuration
Measure the length	50M	The voltage attenuation is < 1V at 5V supply
Operating voltage	5V	±5%
No-load current	5V:≤20mA	
Operating current	5V:≤50mA	
Signal characteristics	90° phase difference square wave	Phase±0.5°
Output mode	TTL	
Resolution	0.5um 1um	LS200 can only do more than 1un
Positioning accuracy	<40um	Laser interferometer determination
Repeatability	1-1.5um	Laser interferometer determination
Movement speed	Max.5m/s	Customizable
Ambient temperature	-5 ... 60°C	
Storage temperature	-10 ... 70°C	
Ingress protection	IP67 sensor	

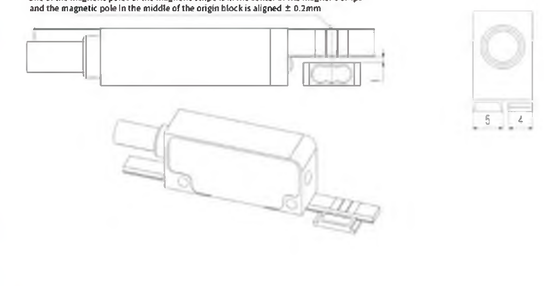
LHR unique origin series sensing mode

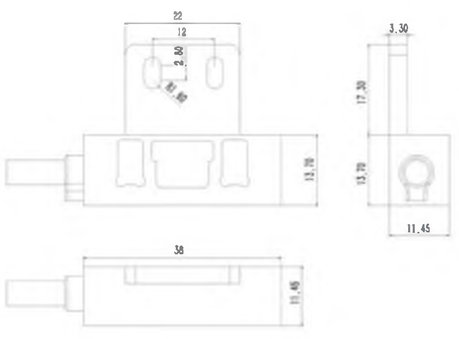
LHR unique origin series sensing methods, providing customers with a variety of methods
Method 1: The origin magnetic pole is integrated into the magnetic stripe.
Pay attention to the position relationship between the origin track and the encoder

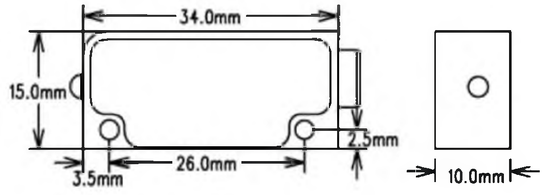


Method 2: Use a 5mm width magnetic stripe with an external origin
Note the position relationship between the origin block and the encoder, and the distance between the origin block and the magnetic stripe is 1mm

One of the magnetic poles of the magnetic stripe is in the center of the magnetic stripe and the magnetic pole in the middle of the origin block is aligned ± 0.2mm







The LH series encoder is a magnetic grid encoder for incremental linear motors, DD motors, and direct drive motors.
The built-in unique origin sensing module can output only -Z signals in the entire stroke.
Under the resolution of 0.5um, it can ensure the high-speed operation and normal output of 8 m/s.
Industry standard RS422 signals, ± ABZ incremental digital signals, quadrature AB signals, and Z signals
The installation is simple, the integrated LED alarm indicator light, and the induction distance from the magnetic stripe and magnetic ring is large.
Ultra-flexible drag chain line, resistant to more than 20 million bending times.
Non-contact, can be used in harsh environments. THE OPERATING TEMPERATURE RANGE IS -30°CC TO +80°CC
It has good resistance to shock, vibration and pressure. Compact size, bright body sealed waterproof IP68.

example: LHR 200 - 001 - 5 - 8 - 0.5m - DB9t

series	resolution	output	Output type
LHR	001:1um	8:8core	DB9:DB9Male
LR	LHR200		DB15:DB15Male
			NC:Bare wire output

Magnetic pole distance	voltage	Wire length
200:Grid pitch2mm	5:5V	3m:3M
		0.5m:0.5M

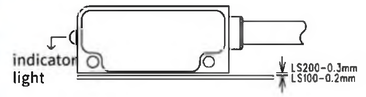
Linear module cost-effective model, LS200/LH200 series

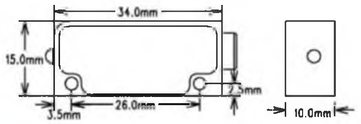
Shell: Black oxidized aluminum alloy
High precision, high subdivision, and good anti-interference waveform
Easy installation and troubleshooting of LED indicator lights
Wire: Super flexible for over 10 million times, drag chain wire.
1Vpp sine and cosine are optional
Outgoing methods: NC bare wire, DB9, DB15, other customizable
Common resolution: 0.5um 1um
Repetitive positioning accuracy: ± 1um

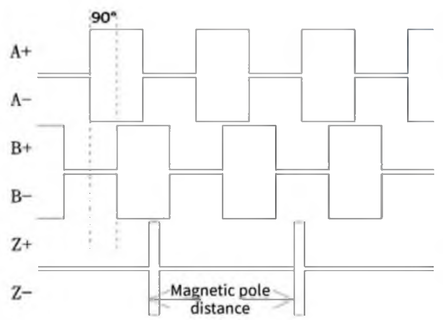
color	red	black	green	purple	white	blue	yellow	Brown	shield
Differential output	5V	GND/0V	A+	A-	B+	B-	Z+	Z-	Shell
DB9 male head	5	9	4	8	3	7	2	6	Shell
DB15 male head	7	2	14	6	13	5	12	4	Shell

Technical specifications

Features	Technical data	Supplement
Sensor material	aluminium alloy	
Sensing distance	Recommended within 0.5mm (0.3mm has the highest accuracy)	
External dimensions	34*15*10mm	
Installation hole spacing	26mm	
Supporting magnetic ruler	MS20	
Wire length	Default 0.5M	Customizable
Weight	150g	Under the 3-meter configuration
Measure length	50 meters	Voltage attenuation<1V under 5V
Working voltage	5V	power supply
No load current	5V:≤20mA	±5%
Working current	5V:≤50mA	
Signal characteristics	90 ° phase difference square wave	
Output method	TTL	Phase difference ± 0.5 °
Resolving power	0.5um 1um	
Positioning accuracy	<40um	
Repetitive accuracy	1-1.5um	Laser interferometer measurement
Moving speed	Max.5m/s	Laser interferometer measurement
Ambient temperature	-5 ... 60°C	Customizable
Storage temperature	-10 ... 70°C	
Protection level	IP67 sensor	







Product selection

Example: LS 200 - 001 - 5 - 8 - 0.5m - DB9

series	resolving power	output	type of output
LS	001:1um	8:8core	DB9
LH	005:5um		DB15
	0005:0.5um		NC:Bare wire

Magnetic pole distance	Voltage	Wire length
200:Fence spacing2mm	5:5V	3m:3m
		0.5m:0.5m

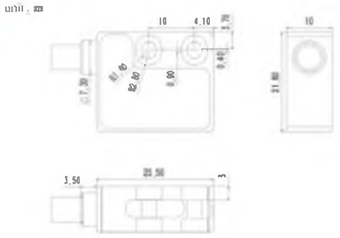
Precision linear motion gratings, K200/LK200 series

Shell: Black oxidized aluminum alloy
High precision, high subdivision, and good anti-interference waveform
Easy installation and troubleshooting of LED indicator lights
Wire: Super flexible with over 10 million cycles, drag chain cable
Outgoing methods: NC installation line, DB9, DB15, other customizable
Common resolution: 0.5 microns and 1 micron
Repetitive positioning accuracy: ± 1um

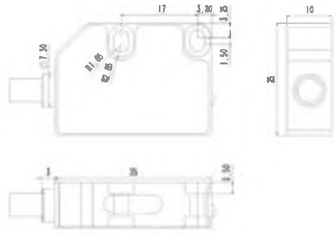
color	red	black	green	purple	white	blue	yellow	Brown	shield
Differential output	5V	GND/0V	A+	A-	B+	B-	Z+	Z-	Shell
DB9 male head	5	9	4	8	3	7	2	6	Shell
DB15 public head	7	2	14	6	13	5	12	4	Shell

Technical specifications

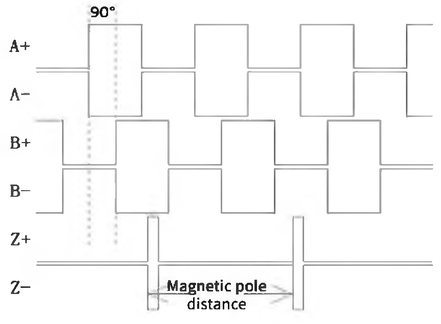
Features	Technical data	Supplement
Sensor material	aluminium alloy	
Sensing distance	Recommended within 0.5mm (0.3mm has the highest accuracy)	
External dimensions	33*15*10 (K200)	25*22*10 (LK200)
Installation hole spacing	17mm (K200)	10mm (LK200)
Supporting magnetic ruler	MS20	
Wire length	Default 3M	Customizable
Weight	160g	Under the 3-meter configuration
Measure length	50 meters	Voltage attenuation<1V under 5V
Working voltage	5V	power supply
No load current	5V:≤20mA	±5%
Working current	5V:≤50mA	
Signal characteristics	90 ° phase difference square wave	
Output method	TTL	Phase difference ± 0.5 °
Resolving power	0.5um 1um	
Positioning accuracy	<30um	Other requirements can be
Repetitive accuracy	1-1.5um	customized
Moving speed	Max.5m/s	Laser interferometer measurement
Ambient temperature	-5 ... 60°C	Laser interferometer measurement
Storage temperature	-10 ... 70°C	Customizable
Protection level	IP67 sensor	



LK200



K200



Product selection

example: K 200 - 001 - 5 - 8 - 0.5m - DB9

series	resolving power	output	type of output
K	001:1um	8:8core	DB9
LK			DB15

Magnetic pole distance	Voltage	Wire length
200:Fence spacing2mm	5:5V	3m:3m
		0.5m:0.5m

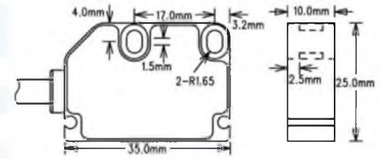
Machine tool and automation field anti-interference, high protection, K500/C500 series

Non contact open adaptation to various environments
High pollution resistance of metal pipes suitable for metal cutting and processing
Installation convenience and troubleshooting of dual LED indicator lights
Super strong anti-interference and anti pollution ability
Wire: Super flexible drag chain wire with a bending resistance of over 20 million times
Voltage: 5V 24A for general use
Outgoing wire type: NC bare wire, DB9, DB15, other customizable

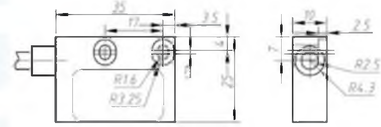
color	red	black	green	purple	white	blue	yellow	Brown	shield
Single ended output PLC	5/24V	GND/0V	A+		B+		Z+		Grounding
Differential output	5/24V	GND/0V	A+	A-	B+	B-	Z+	Z-	Shell

Technical specifications

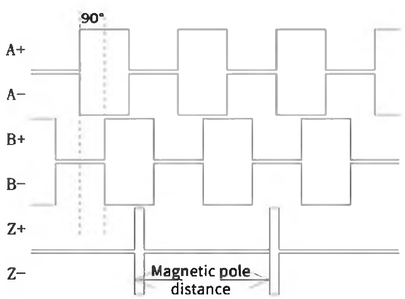
Features	Technical data	Supplement
Sensor material	aluminium alloy	
Sensing distance	C500/K 500:M ax. 2mm，Recommended 1.5mm	
	C200/K 200:M ax. 0.7mm，Recommended 0.3mm	
External dimensions	35*25*10mm	
Installation hole spacing	17mm	
Supporting magnetic ruler	MS50/MS20	
Wire length	Default 3M	Customizable
Weight	170g	Under the 3-meter configuration
Measure length	50 meters/100 meters	Voltage attenuation<1V under 5V power supply
Working voltage	5V-24V	±5%
No load current	5V:≤20mA	24V:≤10mA
Working current	5V:≤50mA	24V:≤25mA
Signal characteristics	90° phase difference square wave	Phase difference ± 0.5°
Output method	RS422、TTL、Single ended output, differential output, black wave	
Resolving power	K500:625、312.5、200、125、100、62.5、50、40、20、12.5、10、5、2.5	
	K200:250、125、80、62.5、50、40、25、20、16、12.5、10、8、5、4、2.5、2、1	
Positioning accuracy	<30um	Laser interferometer measurement
Repetitive accuracy	± 1 resolution	Laser interferometer measurement
Moving speed	Max.9m/s	Customizable
Ambient temperature	-5 ... 60°C	
Storage temperature	-10 ... 70°C	
Protection level	IP67 sensor	



K500



C500/C200



Product selection

Example: K500 - 005 - 5 - 8 - 3m - 200k - B

model	resolving power	output	frequency
K500	001:1um	4:4core	200K:200KHZ
C500	005:5um	5:5core	40K:40KHZ
C200		8:8core	4M:4MHZ

Wire length	Wire material
3m:3m	B:Metal tube
0.5m:0.5m	nothing:rubber

The selection frequency must be lower than the dual phase counting acquisition frequency of the receiving end

K500 C500 can only produce 2.5um or more, C200 can produce 1um

Robot specific encoder

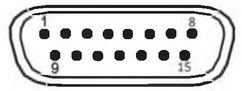
Miniature linear encoder LS40

Ultra small volume PCBA incremental encoder
Humanoid robot finger joint ultra small high-precision encoder
Medical instrument ultra small linear encoder
Can output dark wave or ABZ pulse square wave TTL
Support non-standard customization

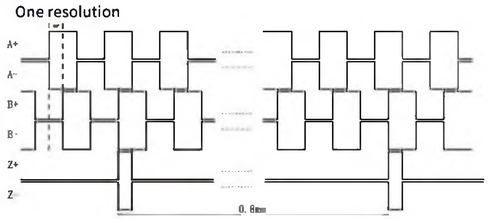
Electrical parameters

Features	Technical data	Supplement
Working voltage	5V	±5%
Current consumption	60mA (MAX)	At room temperature of 25 ° C
Resolving power	1um	Customizable
Output signal	±ABZ	Industrial RS422 standard
Maximum measurement length	30mm	Depends on the magnetic stripe
Maximum speed	1.6m/s	At a resolution of 0.1um
Sensing distance	0.15mm ±0.05	0.15mm has the highest accuracy
External dimensions	7.6*7.4*0.8MM	
Installation hole spacing	4.6mm	
Supporting magnetic ruler	MS04	
Working temperature	-20 ... 60°C	
Storage temperature	-40 ... 105°C	
Protection level	IP67	

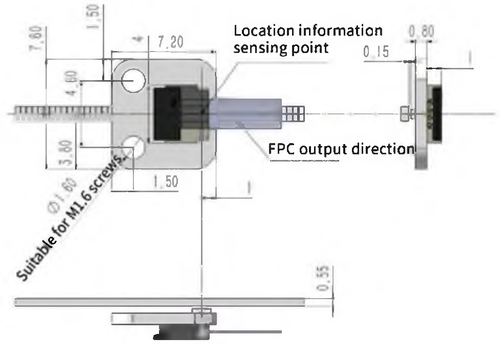
Interface definition



Signal Description



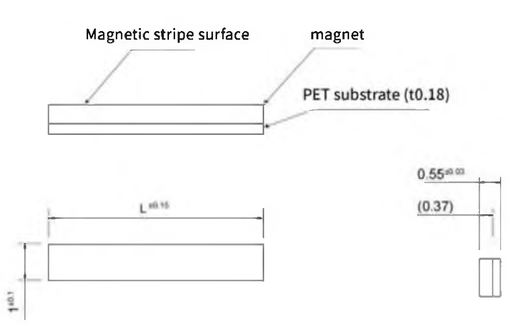
Induction diagram



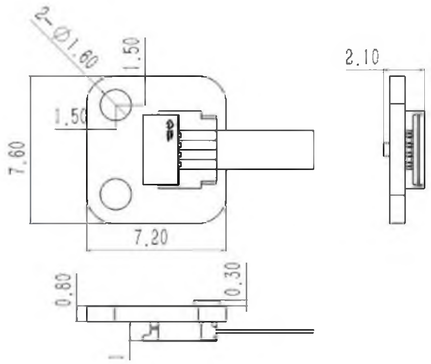
Double row DB15 male head

Foot position	Line color	Dual Drive
1		
2	black	OV
3		
4	Brown	Z-
5	blue	B-
6	purple	A-
7	red	5V
8		
9		
10		
11		
12	yellow	Z+
13	white	B+
14	green	A-
15		
Shell		shield

Magnetic tape size

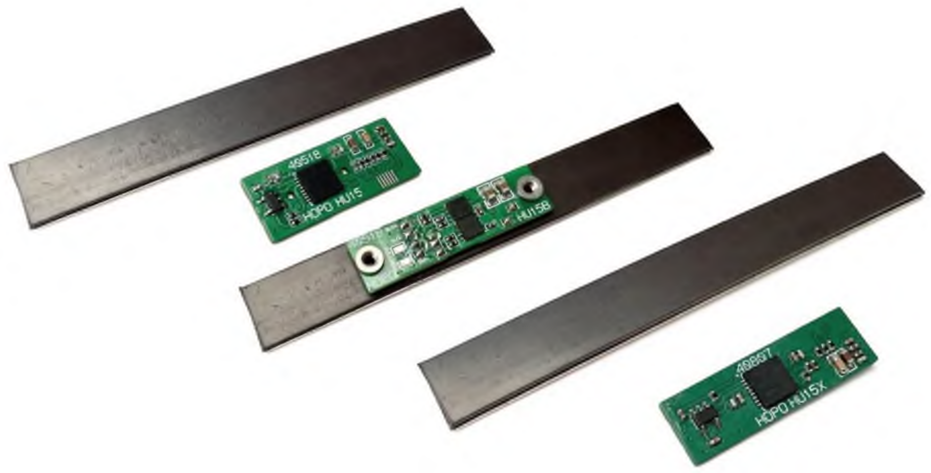


Sensor size



Ultra-thin linear absolute encoder HU15/LU15/HU15X

Feedback of absolute values of finger joints and other joints in humanoid robots
Medical instrument linear absolute value feedback
Semiconductor equipment precision feedback linear absolute value
Robot dog linear absolute feedback
Support non-standard customization



Electrical parameters

Name	Parameter
Trip	200mm
Voltage	5V
Maximum speed	20m/s
Resolution	≈0.2um

Signal Description

Name	Output signal
HU15	SPI
HU15X	SPI
LU15	BISS-C and SSI

Ultra-thin linear absolute encoder ultra-long stroke LSA2

Electrical parameters

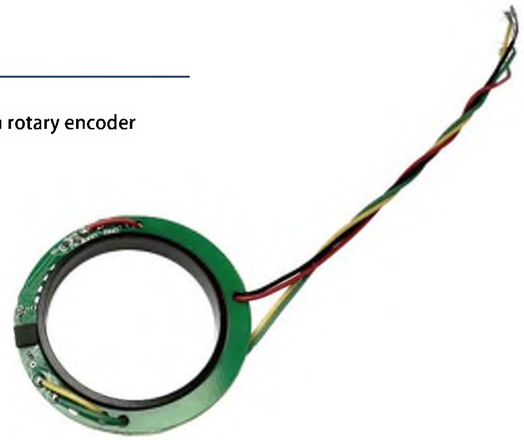
Name	Parameter
Maximum travel distance	High precision measurement of 16 meter straight line
Resolution	0.um-10um

Signal type

Name	Parameter
Tamagawa Absolute Value	BISS-C and SSI

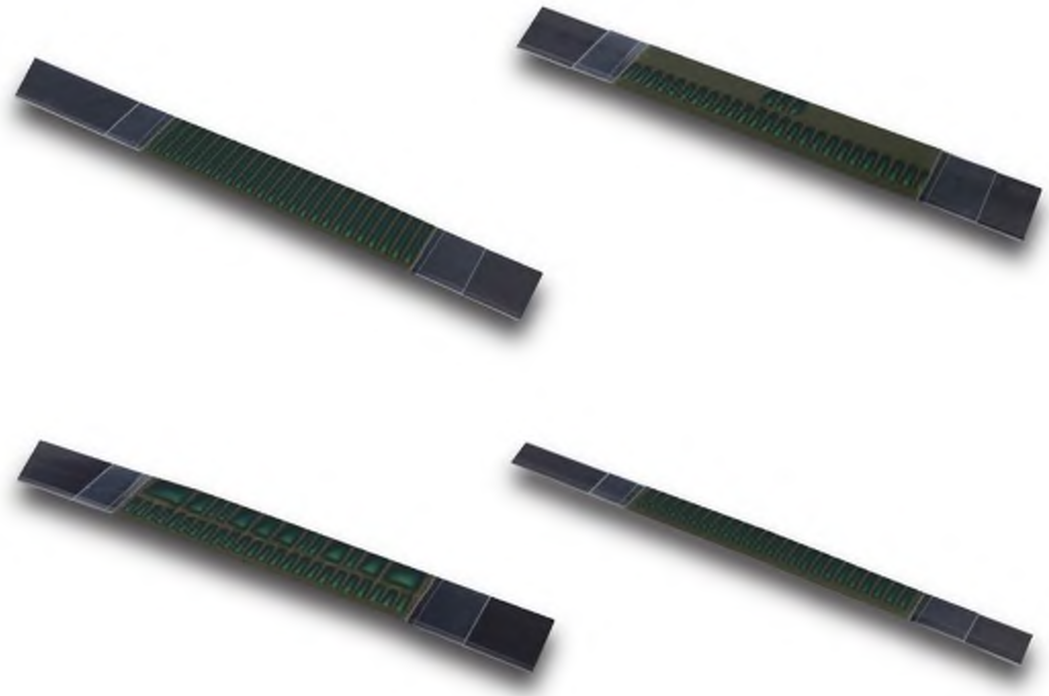
Robot wheel motor encoder RSN-1024

Ultra large medium hole high-precision rotary encoder
Support non-standard customization



Magnetic tape, MS20/MS10/MS50

A sensor made using the principle of magnetic poles. The base ruler is a steel strip with uniformly magnetized S and N poles arranged at uniform intervals on the strip, and counting is done by reading the changes in the S and N poles with a reading head. Magnetic grid ruler is economical and efficient, suitable for long-distance measurement. Especially suitable for harsh environments such as oil stains, cutting chips, vibrations, etc.



Model	MS50	MS20	MS10	MS20-5	MSR20-10	MSR20-60
Magnetic pole distance	5mm	2mm	1mm	2mm	2mm	2mm
Size (mm)	10*1.5	10*1.5	10*1.5	5*1.5	10*1.5	10*1.5
Reference point	N/A	N/A	N/A	N/A	per 10mm	per 60mm

Technical specifications

Content	Parameter
Code	Incremental, absolute value, single code channel, dual code channel
Polar distance	1, 2, 5 (mm)
Operating temperature	0°C … +50°C
Storage temperature (untreated)	Short term: -10 °C...+60 °C Mid term: 0 °C... 40 °C Long term:+18 °C
Relative air humidity	Maximum 95%, when not condensed
Accuracy in millimeters at 20 °C	+/-(0.025+0.02 × L [m]) (L=measured length in meters)
Length expansion caused by heat	L[m]=L[m]×α[1/K]×⌧[K] (L=length of magnetic ruler in meters, ⌧=relative temperature change)
Coefficient of length expansion	α ≈ 16 × 10-6 1/K
Bending radius	Minimum 100mm
Available length	50m (to 100m, please consult in advance)
Magnetic ruler weight	Ca.62g/m (including adhesive tape and cover film)
Weight of covering tape	Ca.19g/m (including adhesive tape and cover film)
External magnetic influence	The distance between the external magnetic field and the surface of the magnetic ruler cannot exceed 64mT (640 Oe; 52kA/m), otherwise it may damage or destroy the magnetic ruler code
Protection level	IP67

Installation steps

- Thoroughly clean the bottom surface
- Remove the protective film from the tape attached to the magnetic ruler
- Apply force to stick the magnetic ruler
- Thoroughly clean the surface of the magnetic ruler
- Remove the protective film pasted on the cover tape
- Apply force to the cover tape
- Cover the terminal with anti detachment treatment and install a terminal cap.

Matters needing attention

- Attention! The position ruler is made of magnetic material, and special attention should be paid to not coming into contact with strong magnetic substances or being placed in a strong magnetic field during use and installation to ensure its functionality.
- Please keep a distance of at least 5 centimeters from a strong magnetic field with a strength of 5000 Gauss to avoid interference with the position measurement system.

Hint

- The magnetic ruler that has been pasted is completely damaged after removal and cannot be used again.

Hint - handle the pasted surface

To ensure optimal adhesion, it is necessary to thoroughly remove all wear-resistant dirt (such as oil, grease, dust, separation agents, etc.) using evaporative solvents. Ketones (acetone) or alcohol are more suitable in this area. A typical cleaning solvent is a 50/50 isopropyl alcohol/water mixture or heptane. Similarly, there are basic cleaning agents such as LOCTITE or 3M. When using solvents, please be sure to pay attention to the warning instructions in production! Anti oxidation sealing should be applied to the adhesive surface of copper, brass and other materials.

Hint - Paste Temperature

The optimal pasting temperature is between+18 degrees and+30 degrees. If the surface temperature to be pasted is below+10 degrees, it is not suitable for pasting because in this case, the adhesive material is too hard and weakens its immediate adhesion. After pasting according to the specifications, there is still connection strength even at zero degrees. According to experience, the final adhesive strength will be reached after approximately 72 hours (+21 degrees).

Selection of magnetic encoder without origin

MS 20 — 10 — 3000

- MS: model
- 20: Fence spacing — 50: 5mm; 20: 2mm; 10: 1mm
- 10: Magnetic ruler width — 10: 10mm; 5: 5mm
- 3000: Order length — 100: 100mm; 3000: 3m; 50000: 50m (Whole box)

Selection of magnetic encoder with origin

MSR 20 — 10 — 3000

- MSR: model
- 20: Fence spacing — 20: 2mm
- 10: Origin spacing — 10: 10mm; 60: 60mm
- 3000: Order length — 100: 100mm; 3000: 3m; 50000: 50m (Whole box)

(A magnetic tape with a width of 5mm and only supports a grid spacing of 2mm)

Optical scales series

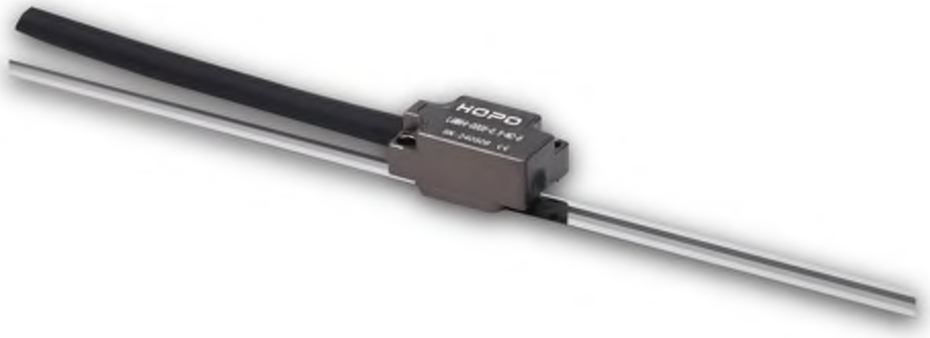
Sophisticated feedback

Measure the future

HOPO 霍浦科技

Micro Optical scale
LGM64 series

The LGM64 encoder outputs a digital signal directly from the readhead and integrates full position feedback, on-board interpolation, and optical filtering in a tiny package.
Position mounting can be carried out with the help of an LED indicator inside the readhead.
Miniature all-in-one digital output grating, the resolution can be freely customized (64um/4/INTX (interpolation up to 1024)).
Only one ruler with a pitch of 64um is provided (the length of the ruler can be selected by yourself).
Small package size (21.4mm× 12.7mm×9.45mm))



Wiring definition

Output signal				Cable type	
Function	Signal		color	9-pin D-type (A)	15-pin D-type (D)
				Ordinary	
Oower supply	5V		red	5	7,8
	0V		black	9	2,9
I ncrement	A	+	green	4	14
		-	purple	8	6
	B	+	white	3	13
		-	blue	7	5
Reference Mark	Z	+	yellow	2	12
		-	brown	6	4
Shield			shield	Housing	Housing

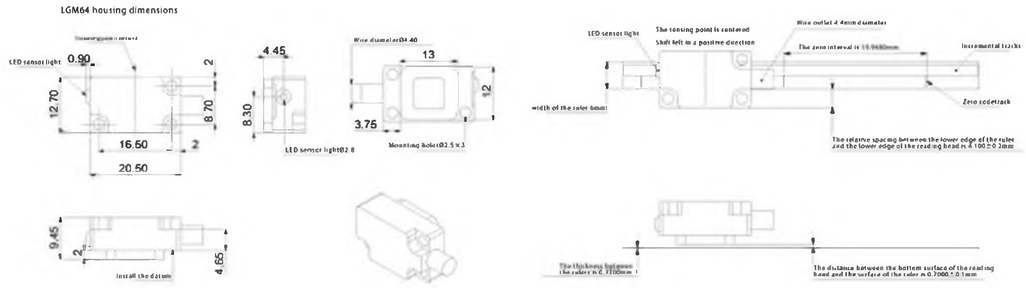
Technical Specifications:

Features	Technical parameters	Supplement
Operating voltage	5V	±5%
Current consumption	Normal < 100mA: 120mA	25° room temperature
	error alarm	
Grid pitch	64um	
Maximum speed	0.1um-1.6m/s 0.5um-8m/s 1um-12.8m/s	
Qualifying method	Direct outlet	Optional(DB9/DB15)
Sensor material	aluminium	
Weight	23g	0.5 m read head
Dimensions	20.80*12.7*9.45MM	
Wire length	default0.5M	Customizable
Operating temperature	-5 ... 70°C	
Storage temperature	-20 ... 70°C	

Electrical connections

Cable specifications	
Cable type	TPU cable, energy chain-compatible, double-shielded, twisted-pair
Number of wires	8
Outside diameter	4.4 mm ±0.15 mm
Sheath material	TPU
Conducting wire	0.08 mm2, 28 AWG, 0.38 Ω/m
Shielding rate	90%
Durability	40 million cycles with a bend radius of 35 mm
weight	34 g/m nominal
Bending (internal) radius	Dynamic 25 mm, static 10 mm

LGM64 housing dimensions



Ordering parameters of the optical scale

example: GS64 - 100 - Z

- Grid pitch: 64:64um
- origin: Z:With zero position (The pitch is 64mm)
- length: 100:100mm

Ordering parameters for the optical read head

example: LGM64 - 001 - 0.5 - DB9

- Model
- resolution: 001:1um; 0005:0.5um; 0001:0.1um
- Output type: DB9:DB9plug; NC:Bare wire; DB15:DB15plug
- Wire length: 0.5:0.5M; 3:3M; 5:5M

Round grating Rotary scales increment: LGMR64 series

The LGMR64 rotary encoder readhead outputs a digital signal directly from the readhead and integrates full position feedback, on-board interpolation and optical filtering in a tiny package

It can be used with different discs to output different number of lines

The models are relatively complete

It can achieve large hollow and high line count

Each lap has a unique origin

Product selection: LGMR64 series reading head

example: LGMR 64 - 160X - 0.5 - DB9 - A

- Circular grating
- interpolation
  - 1X (Match interpolation according to disc selection)
  - XXX (interpolation range 0-160)
- Wire length
  - 0.5:0.5M
  - 1:1M
  - 3:3M
- Output interface
  - NC:Bare wire 8 cores
  - DB9:DB9plug
  - DB15:DB15plug
- Disc model (must correspond to the disc disc):
  - A:GSR64-10885
  - B:GSR64-8360
  - C:GSR64-5636
  - D:GSR64-3618
  - E:GSR64-126100
  - F:GSR64-6846
  - G:GSR64-4630

Product selection: rotary scale

example: GSR64 -126100

Raster discs

Disc type (must correspond to the encoder):

- A:GSR64-10885
- B:GSR64-8360
- C:GSR64-5636
- D:GSR64-3618
- E:GSR64-126100
- F:GSR64-6846
- G:GSR64-4630
- H:GSR64-2612
- L:GSR64-1606

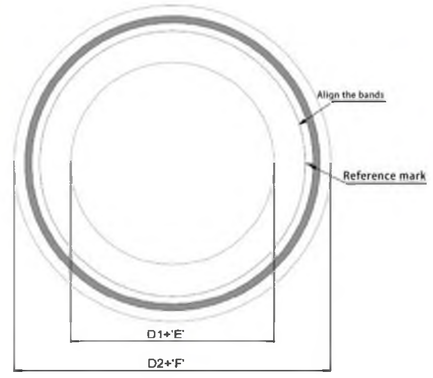
LGMR64 - Optical Rotary Scales Specifications

Model	Code name (selection)	D2 (outer diameter mm)	D1 (inner diameter mm)	E (Inner Diameter Error)	F (Outer Diameter Error)
GSR64-126100	E	126	100		
GSR64-10885	A	108	85		
GSR64-8360	B	83	60		
GSR64-6846	F	68	46		
GSR64-5636	C	56	36	-0.05/+0.1	-0.1/+0.05
GSR64-4630	G	46	30		
GSR64-3618	D	36	18		
GSR64-2612	H	26	12		
GSR64-1606	L	16	06		

Number of threads is selected

(The number of wires other than the corresponding model can be provided wire harness = CPR*X (X value range 1-160)

Model	Interpolation (1X)	Interpolation (16X)	Interpolation (32X)	Interpolation (160X)	
GSR64-126100	6000	96000	192000	960000	Count 4 octaves
GSR64-10885	5000	80000	160000	800000	
GSR64-8360	3750	60000	120000	600000	
GSR64-6846	3125	50000	100000	500000	
GSR64-5636	2500	40000	80000	400000	
GSR64-4630	2000	32000	64000	320000	
GSR64-3618	1500	24000	48000	240000	
GSR64-2612	1125	18000	36000	180000	
GSR64-1606	625	10000	20000	100000	



PCBA Linear Optical Scales
LGM64 series

The LGMB64 encoder outputs a digital signal directly from the readhead and integrates full position feedback, on-board interpolation, and optical filtering in a tiny package.

Position mounting can be carried out with the help of an LED indicator inside the readhead.

Miniature all-in-one digital output grating, the resolution can be freely customized (64um/4/INTX (interpolation up to 1024)).

Only one ruler with a pitch of 64um is provided (the length of the ruler can be selected by yourself).

Small package size (30mm× 8mm×3mm)

Product selection: LGMB series reading heads

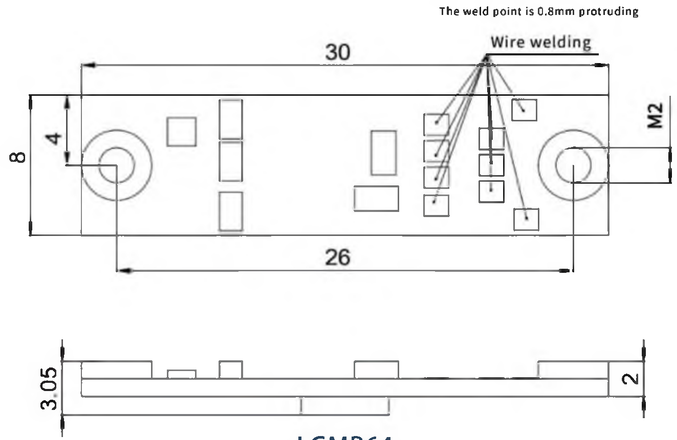
example: LGMB64 - 001 - 0.5 - DB9 - 6

- LGMB64: Bare board gratings
- 001: resolution
  - 001:1um
  - 0005:0.5um
  - 0001:0.1um
- 0.5: Wire length
  - 0.5:0.5M
  - 1:1M
  - 3:3M
- DB9: Output interface
  - NC:Bare wire 8 cores
  - DB9:DB9plug
  - DB15:DB15plug
- 6: Linear scale width:
  - 6:The width of the grating ruler is 6 mm
  - 8:The width of the grating ruler is 8 mm
  - (Note: This parameter must correspond to the selected ruler, and different specifications cannot be universal)

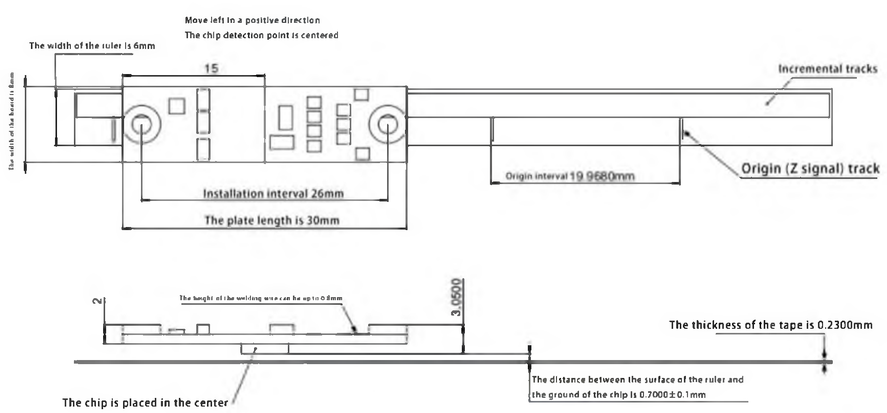
Product selection: linear Optiacl Scales

examplev: GS64 - 100Z - 6

- GS64: Linear Optical Scales
- 100Z: The length of the tape:
  - 100:100mm (Length can be customized)
  - Z:With zero position
  - (8mm width ruler: zero interval 64mm)
  - (6mm in width ruler: zero interval 19.968mm)
- 6: Linear encoder width:
  - 6:The width of the grating ruler is 6 mm
  - 8:The width of the grating ruler is 8 mm
  - (Note: This parameter must correspond to the encoder, and different specifications cannot be universal)



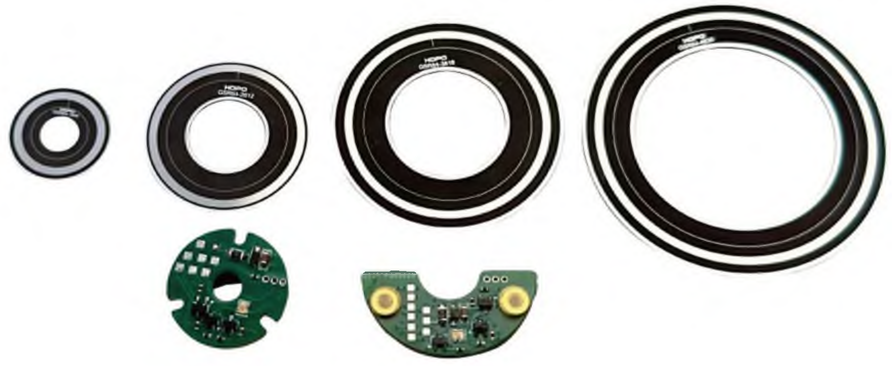
LGMB64

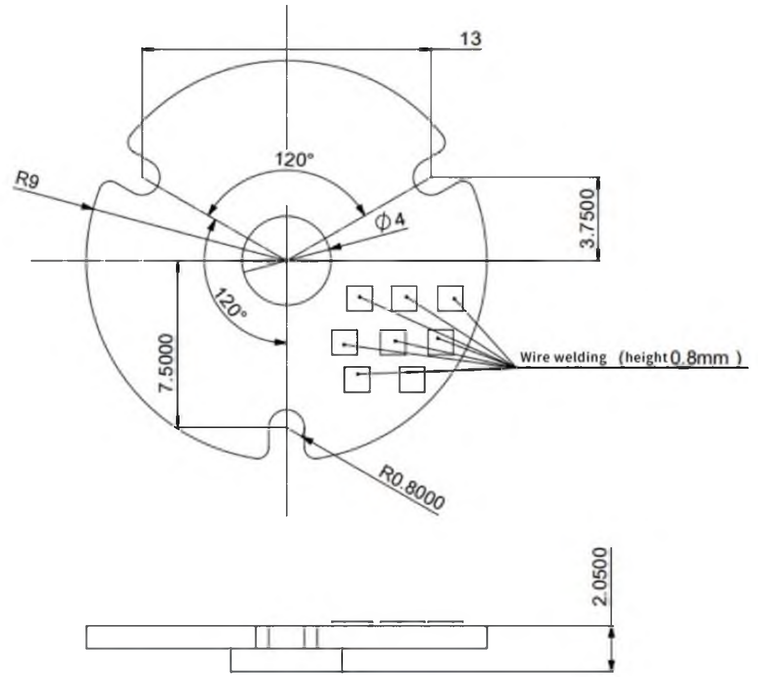


LGMB64-Installation

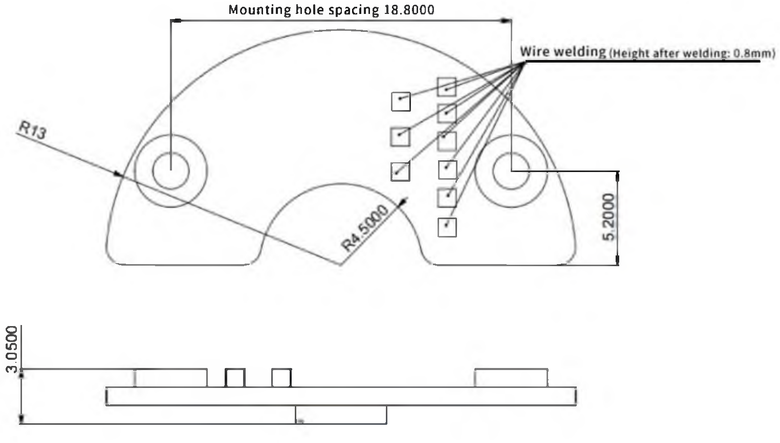
PCBA Rotary Scales
LGMBR64/LGMFR64 series

4 discs 16 26 36 46





LGMFR64



LGMBR64

Product selection: LGMBR64 series read heads

example: LGMBR64 - 160X - 0.5 - DB9 - A

Bare board round grating series
LGMFR64:The bare board is rounded
LGMBR64:The bare board is rounded

interpolation
1X(Match the interpolation according to the disc selection)
XXX (interpolation range 0-160)

Wire length
0.5:0.5M
1:1M
3:3M

Output interface
NC:Bare wire 8 cores
DB9:DB9plug
DB15:DB15plug

LGMBR64Corresponding pallet
(select board according to size):
A:GSR64-10885 B:GSR64-8360
C:GSR64-5636 D:GSR64-3618
E:GSR64-126100 F:GSR64-6846
G:GSR64-4630 H:GSR64-2612

Product selection: Rotary scales

example: GSR64 -12610

Optical rotary scales
(must correspond to the encoder):
A:GSR64-10885 B:GSR64-8360
C:GSR64-5636 D:GSR64-3618
E:GSR64-126100 F:GSR64-6846
G:GSR64-4630 H:GSR64-2612
L:GSR64-1606

LGMFR64Corresponding code disc
L:GSR64-1606

Digital Display Series

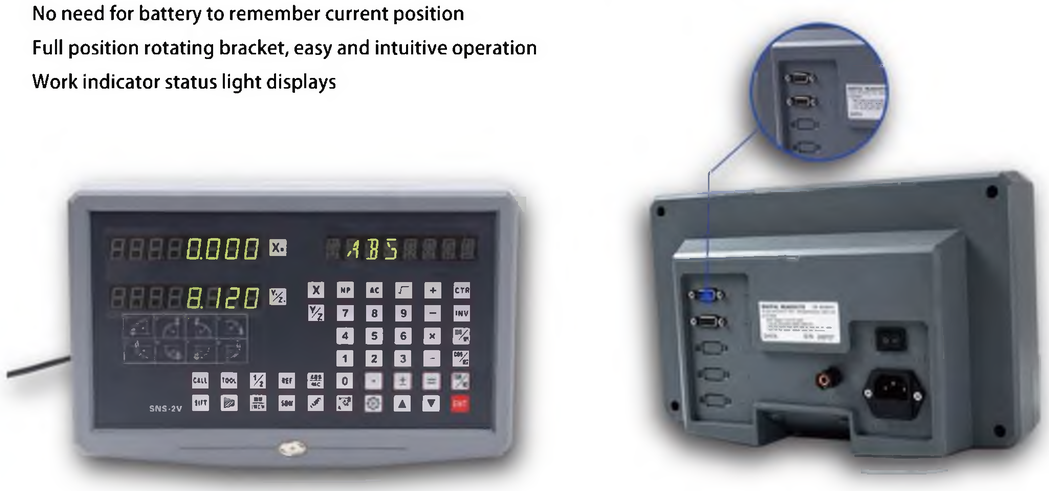
Stable Performance

Specifications

Quality

Digital display,
single axis/two axis SNS-2V/ three axis SNS-3V

Adopting a single touch button with a lifespan of over 10 years
High brightness digital tube displays clearly
Adopting high-frequency switching power supply with short circuit, overload, and overvoltage protection
No need for battery to remember current position
Full position rotating bracket, easy and intuitive operation
Work indicator status light displays

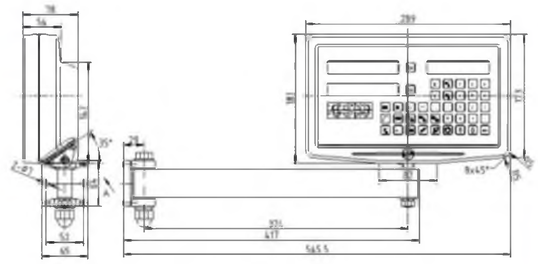


16 major functions

Coordinate reset to zero	500 sets of user memories	Arc machining	Zero position automatic counting
Automatic scoring	Calculator	Slope processing	In place control output
Set number	Circular perforation	Digital filtering	Control mode setting
ABS.INC coordinates	Diagonal perforation	RS232 interface	Rise height setting

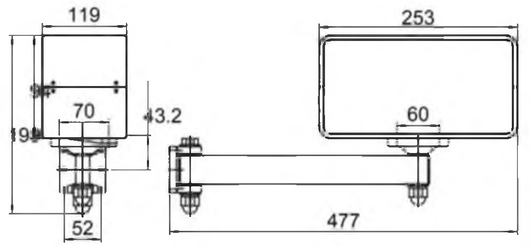
Electrical parameters

Name	Parameter
Power Supply	AC 85～ 240V 50Hz～ 60Hz
Power	5VA
Working temperature	0℃ ～ 60℃
Storage temperature	-10℃ ～ 85℃
Relative humidity of the environment	80%（20±5℃）
Input signal	TTL square wave
Coordinate number	Single coordinate system
Octave number	4X
Allow input signal frequency	⩽ 1000 kHz
Resolving power	0.01um to 500um

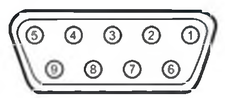


RS-232 wiring definition

Foot position	Single drive (default)
1	NC
2	TXD
3	RXD
4	NC
5	GND
6	NC
7	NC
August 9th	NC



Interface Description



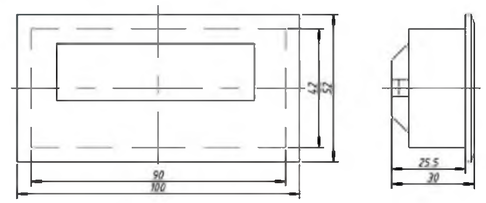
Definition of Sensor Wiring

Foot position	Single drive (default)	Dual Drive
1	empty	A-
2	OV	OV
3		B-
4		NC
5		R-
6	A+	A+
7	5V	5V
8	B+	B+
9	R+	R+

Magnetic digital display meter -M500 (Length, Angle measurement)

Characteristic

- ◆ The maximum display accuracy is 10 μ m or 0.001 inches
- ◆ The maximum repeatability accuracy is ± 0.01 mm
- ◆ 7-bit low-power LCD display with multiple icons
- ◆ The maximum reading distance of the sensor/magnetic grating ruler is 2mm
- ◆ Millimeter, millimeter, and millimeter modes Multi segment compensation and proportion coefficient
- ◆ The battery operates without the need for an external power source
- ◆ Analog output can be customized according to customer requirements



Instrument dimension diagram

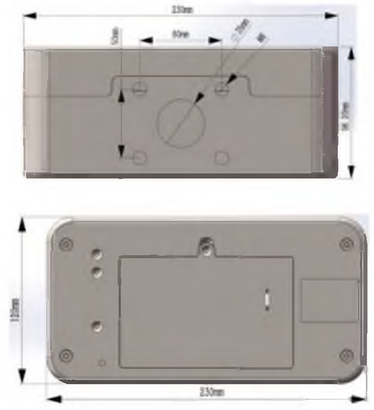
Features	Technical data	Supplement
Outer frame structure	Embedded kit	
Reading distance of sensor/magnetic grating	Max.2.5mm， Recommended 1.3mm	
Ruler	100×52mm	
Exterior dimensions	92×43mm	
Cut out length	Ms50	
Supporting magnetic ruler	0.15 ... 6m	Default 1 meter
Sensor degree	DC 2 ... 3.3 V	Two AA 5 units do not require external power
Working voltage	⩽600μA	supply
Current consumption	-1999999~1999999	3V direct current; Display operation
Display range	0.01，0.05，0.1，1mm	
Resolving power	± (0.03+0.01 * L) mm L Unit: m	
System accuracy	Max.±0.01mm	Under the condition of TU=20 °C
Repetitive accuracy	2m/s， 3m/s	
Moving speed	-10°C ~+70°C	It can be set in menu F04
Ambient temperature	0°C ~60°C	
Storage temperature	Ip40 instrument	
Protection level	Ip67 sensor	

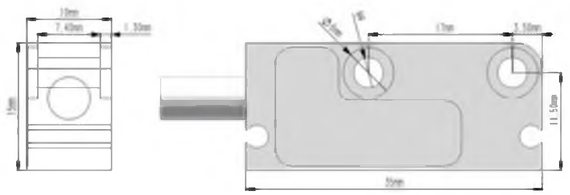
Magnetic digital display meter
M210

Four windows display independently at 90 ° , 45 ° , material height, and counting
Easy installation and replacement of aviation plugs
Nine grid full keyboard operation is fast and simple
Self charging lithium batteries are ultimately replaceable
Optional millimeter/inch
Comparison coefficient multi-stage compensation 45 ° individual compensation

Characteristic

- ◆ Newly upgraded appearance with high-end intelligent digital display
- ◆ Reader head upgrade: High precision, no need for multi-stage compensation within 3mm installation spacing
- ◆ Ultra wear-resistant brush design to remove debris affecting accuracy
- ◆ Modular functions: height measurement, lifting control, saw head swing sensing, printer auxiliary functions
- ◆ Switch the dedicated mode of the internal swing saw with one key, only displaying the degree and counting





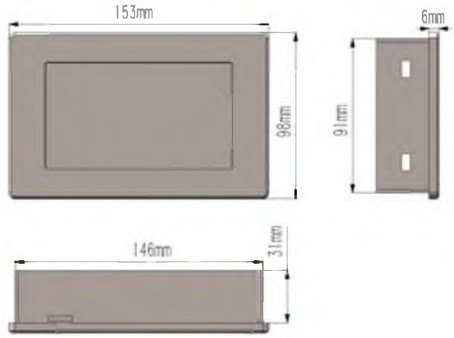
Reading head size diagram

Electronic performance		Mechanical performance	
System accuracy	± (0.03+0.01 * L) mm L Unit: meter	External dimensions	120*230*96.2mm
Repetitive accuracy	Max.±0.01mm	Cut out length	None
Resolving power	0.01, 0.05, 0.1, 1	Reading head line length	Default 3m
Display range	-1999999 ~1999999	Reading head gap	Max.2.5mm， Recommended 1.2mm
Current consumption	Max.650uA	Moving speed	Max.1.6m/s
Power Supply	External: AC110~220V, built-in 3.7V battery	Supporting magnetic ruler	Ms50
Operating temperature	0℃ ~+60℃	Waterproof level	Digital display meter IP40, reading head IP65
Storage temperature	-10℃ ~+70℃	Weight	Max.1300g；Min.1100g
Output contact	MAX.250VAC/5A；MAX.30VDC/5A		

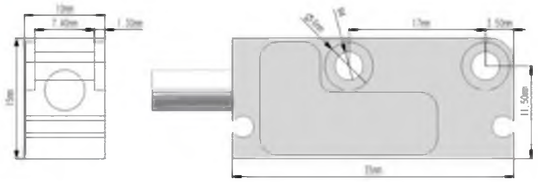
5 inch touch color digital display
HT50

Characteristic

- One click measurement of material height, convenient and fast storage of material height
- Lithium battery power-off memory
- Material rack function with adjustable material height mode
- Swing mode swing compensation multi-stage compensation
- Printer function supports intermediate input and output
- Printing customer information and order number



Instrument dimension diagram



Reading head size diagram

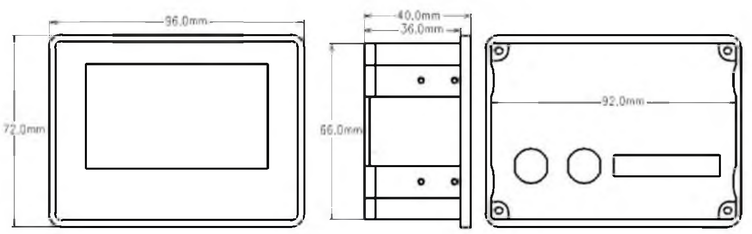
Electronic performance		Mechanical performance	
System accuracy	± (0.03+0.01 * L) mm L Unit: meter	External dimensions	153*98*37mm
Repetitive accuracy	Max.±0.01mm	Cut out length	147*92mm
Resolving power	0.01, 0.05, 0.1, 1	Reading head line length	Default 3m
Display range	-1999999 ~1999999	Reading head gap	Max.2.5mm， Recommended 1.5mm
Current consumption	Max.650uA	Moving speed	Max.1.6m/s
Power Supply	External: DC12~24, built-in 3.7V battery	Supporting magnetic ruler	Ms50
Operating temperature	0°C ~+60°C	Waterproof level	Digital display meter IP40, reading head IP65
Storage temperature	-10°C ~+70°C	Weight	Max.777g

Magnetic digital display meter
M320

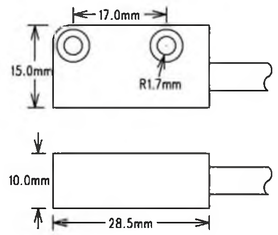
Four windows display independently at 90°, 45°, material height, and counting
Easy installation and replacement of aviation plugs
Nine grid full keyboard operation is fast and simple
Self charging lithium batteries are ultimately replaceable
Optional millimeter/inch
Comparison coefficient multi-stage compensation 45° individual compensation

Characteristic

- High brightness LCD screen
- Dual axis independent display
- Quasi absolute value formula
- Built in lithium battery with no replacement for the entire body
- Convenient disassembly and assembly of aviation plugs
- Multi segment compensation for comparison coefficients
- Optional printer function
- Optional 485 communication



Instrument dimension diagram



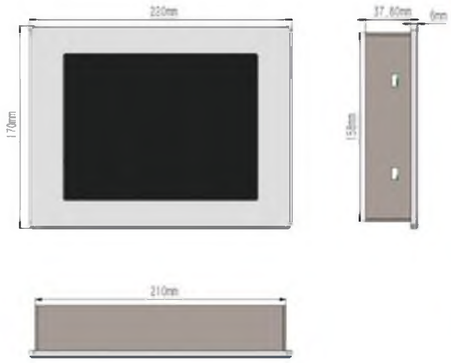
Reading head size diagram

Electronic performance		Mechanical performance	
System accuracy	± (0.03+0.01 * L) mm L Unit: meter	External dimensions	96*72*40mm
Repetitive accuracy	Max.±0.01mm	Cut out length	94*68mm
Resolving power	0.01, 0.05, 0.1, 1	Reading head line length	Default 3m
Display range	-1999999 ~1999999	Reading head gap	Max.2.5mm， Recommended 1.5mm
Current consumption	Max.650uA	Moving speed	Max.1.6m/s
Power Supply	External: DC: 12-24V, built-in 3.7V battery	Supporting magnetic ruler	Ms50
Operating temperature	0°C ~+60°C	Waterproof level	Digital display meter IP40, reading head IP65
Storage temperature	-10°C ~+70°C	Weight	Max.500g

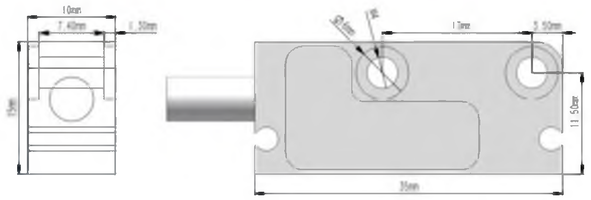
Magnetic Controller
HC80

Characteristic

- ◆ One click measurement of material height, convenient and fast storage of material height
- ◆ Lithium battery power-off memory
- ◆ Material rack function with adjustable material height mode
- ◆ Swing mode swing compensation multi-stage compensation
- ◆ Printer function supports intermediate input and output
- ◆ Printing customer information and order number



Instrument dimension diagram



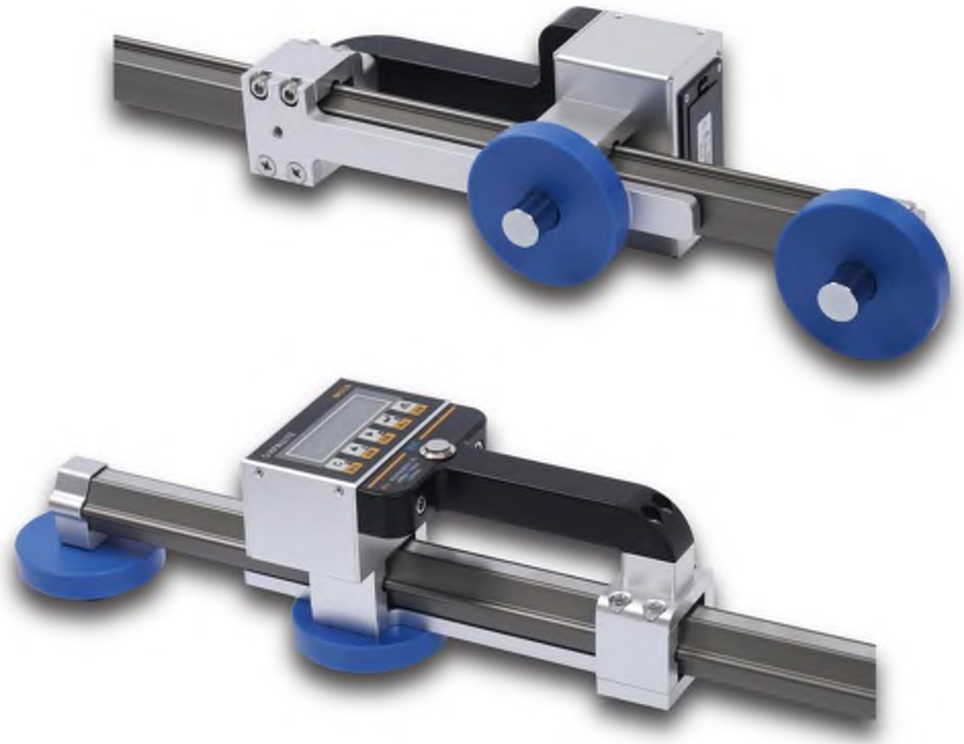
Reading head size diagram

Project	Explanation
Exterior dimensions	220*170*37mm
Open mouth length	212*160mm
Reading head line length	Default 5m
Reading head gap	Max.2.5mm, Recommendation 12mm
Moving speed	Max.2.5m/s
Supporting magnetic ruler	Ms50
Waterproof level	Digital display meter IP40, reading head IP65
Weight	Max 1200g (including packaging, one 5-meter sensor)

Features	Technical data
System accuracy	± (0.03+0.01 * L) mm L Unit: m
Repetitive accuracy	Max.±0.01mm
Resolving power	zero point zero one
Display range	-9999.99~9999.99
Current consumption	Max.800uA
Power Supply	External: DC24V/2A or above, built-in 3.7V battery
Operating temperature	0°C ~+60°C
Storage temperature	-10°C ~+70°C
Output performance	MAX.24VDC/0.5A (source open circuit output has a certain load capacity)
Input performance	Holding DC5~24V signal

Wireless transmission measuring tape
M550

The maximum display accuracy is 10 μ m or 0.001 inches
The maximum repeatability accuracy is $\pm$ 0.01 mm
7-bit low-power LCD display with multiple icons
The maximum reading distance of the sensor/magnetic grating ruler is 2.5mm
Battery operation
Used in conjunction with RTX550 receiver module



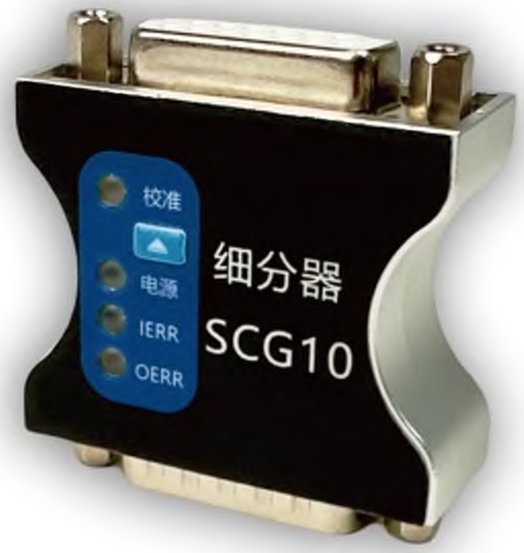
Characteristic

- ◆ Wireless power supply 434Mhz, stable signal without leakage
- ◆ Built in transmitting antenna
- ◆ Customized chip, low power consumption
- ◆ The external button has a long service life and is convenient and fast
- ◆ External battery box, easy to replace.
- ◆ Wireless transmission status reminder
- ◆ One receiver can be equipped with multiple calipers
- ◆ Unique hexagonal ergonomic design of profiles
- ◆ Lightweight grip with excellent grip
- ◆ Unique anti bending design
- ◆ Without bending, the accuracy will be high
- ◆ 2.5 meters only weighs 2.4kg
- ◆ Other customized orders

Model	Display instructions
MM	The current unit is millimeter
INCH	The current unit is inch
	The current unit is degrees
	Display battery level
RF	It appears that data is currently being sent wirelessly
	The current display is in relative mode
1	The current content is the first engineering dimension
2	The current content is the second project dimension

High-performance subdivision box, SCG10

20mVpp-1.4Vpp wide amplitude signal input
AB output can reach up to 10MHz
The input signal can reach 125KHz
Calibration button one click automatic calibration
Both differential and single ended signals can be analyzed
Programmable arbitrary subdivision output
Integrated P and Q limit signal output
The output cable can reach up to 50 meters
Standard RS422 output signal



Input interface: Differential input dual row female head DB15

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
V_{1-}	V_{2-}	V_{0+}	5V	5V		V_{P-}	V_{Q-}	V_{1+}	V_{2+}	V_{0-}	0V	0V		PE

Single ended input dual row female head DB15

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
		V_0	5V	5V		V_{P-}	V_{Q-}	V_1	V_2		0V	0V		PE

Output interface: Double row male DB15

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	0V		Z-	B-	A-	5V	5V	0V	Q	P	Z+	B+	A+	PE

Mechanical parameters

Features	Technical data	Supplement
Sensor material	Aluminium	CNC precision carving
External dimensions	42*45*15MM	
Weight	32g	
Input interface	Double row DB15 female head	With nuts and gold-plated pins
Output interface	Double row DB15 male head	With nuts and gold-plated pins
Plug pins	Gold plated pins	

Electrical parameters

Features	Technical data	Supplement
Input voltage	5V	±5%
Output voltage	5V	Depends on the input voltage
Working current	25mA	Empty load
Output current	300mA	Max.
Peak to peak value of input signal	20mVpp-1.4Vpp	
Input signal midpoint voltage	1.75V-3.15V	
Output position signal	AB orthogonal difference	RS422
Input and output P, Q	Open collector output	The signal parameters depend on the input terminal
Input frequency Max	125KHz	
Output frequency Max	7MHz	Customizable 10MHz
Subdivision parameters	20.40.80.100.200.500.1000.....	Can be subdivided arbitrarily
Positioning accuracy	<20um	Most factors depend on the input signal
Repetitive accuracy	<±1um	Most factors depend on the input signal
Zero position accuracy	<±1um	Most factors depend on the input signal

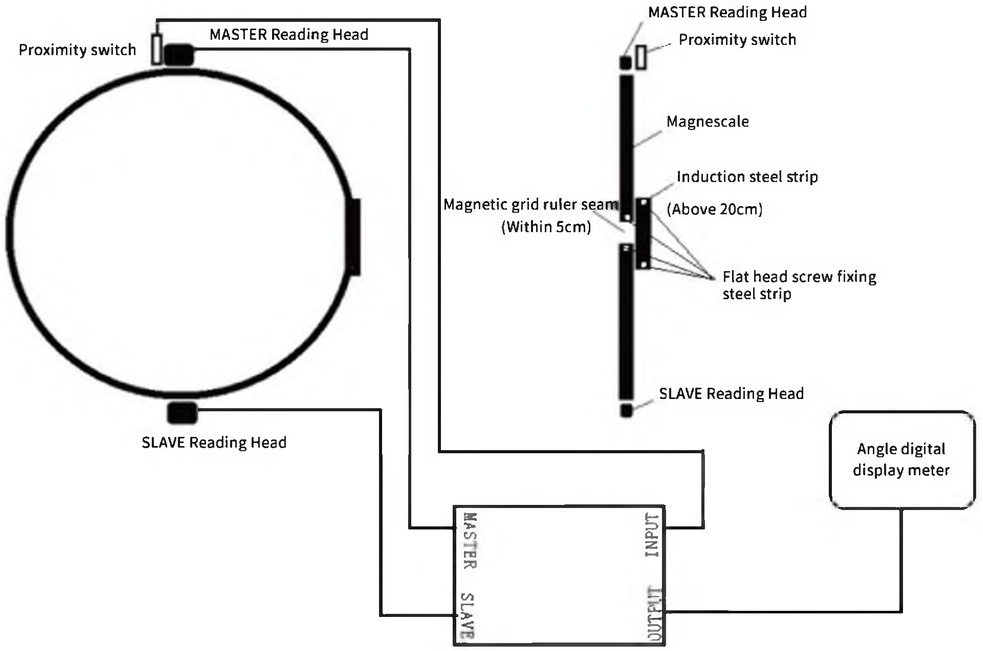
Pulse signal switcher
ETX100

Function Description

Suitable for high-precision measurement of large diameters with a magnetic strip surrounding a circle, it can achieve seamless 360 degree measurement

- 2-channel magnetic grid encoder signal input
- 1 output to digital display or PC board
- The proximity switch senses the owner to achieve signal switching

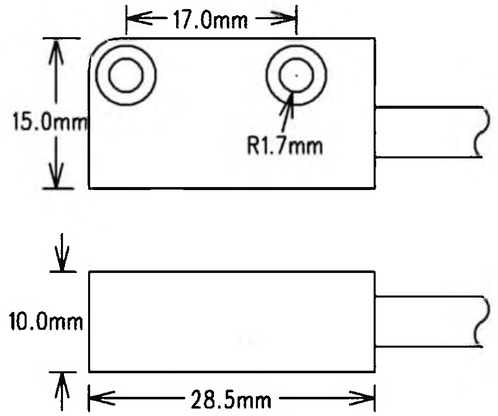
- Automatic switching of dual reading heads, seamless connection during rotation
- Use high-precision reading heads to ensure the accuracy of angle measurement
- No external power supply required, powered uniformly by a digital display meter
- Easy installation, plug-in connection, DB9 signal and dual drive, 1: - A 2:0V 3: - B 6: A 7:5V 8:B
- Fully enclosed sealing design, waterproof and oil resistant
- Simple system debugging, adjustable pulse count



Absolute magnetic measurement module
RM-10

Characteristic

- Absolute position feedback
- Built in lithium battery for automatic charging
- Fast single axis and dual axis movement speed
- RS232/RS485 output



Reading head size diagram

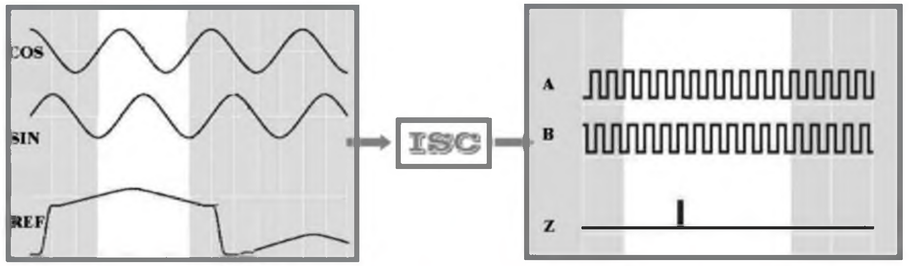
Electrical performance

Sign	Data	Supplement
Working voltage	12 ... 24 V DC	
System accuracy	±(0.03+0.01*L)mm	L unit: meter
Standby power	Max.700uA	
Repetitive accuracy	Max.±0.01mm	
Port	Rs485	MODBUS-RTU protocol
	Rs232	Fixed protocol transparent transmission
Installation method	Rail type buckle	

Isolated string wave divider
SCP10

Characteristic

- 20mVpp~1.4Vpp differential sine wave can handle multiple subdivision magnifications for selection
- Standard RS422 differential output
- ISC technology input/output signal isolation
- Isolated power supply provides clean power output
- One key calibration provides the highest precision position signal ABZ signal output indicator light
- Install the buckle and easily match it with any electrical control cabinet



Features	Technical data	Supplement
Input voltage	5V	±5%
Output voltage	5V	±5%
No load current	100mA	Excluding load
Working current	Max.160mA	Excluding load
Input signal	20mVpp~1.4Vpp	Differential sine wave
Input phase	90°	Deviation± 3 °
Output signal	Differential AB orthogonal wave	
Output phase difference	90°	Deviation± 0.02 °
Signal type	RS422	
Subdivision ratio	Modes: 4, 8, 16, 32, 65 Modes: 5, 10, 20, 40, 50	Customization for other higher demand customers
Maximum output frequency	500KHz	The scanning frequency of the receiving end must be ⩾ 500KHz (Customization for other frequencies)
Maximum input frequency	500KHz/fine fraction	Example: Subdivision of 20 Maximum frequency: 500/20=25KHz
Repetitive accuracy	1-1.5 resolutions	Resolution=(Chord wave width ÷ Fineness fraction)/4 Example: Input a complete sine wave width For 5mm, select 20 resolutions for subdivision: (5÷20) /4=0.0625mm